CLARITY

VIEWER USER MANUAL

iCRco

Digital Imaging Made Simple.™

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Terms

Any one of the following iCR products will be referred to as the "CR unit" throughout this document: iCR Vet™, iCR Vet Dual™, iCR Mobile™, iCR 1-D™, iCR Chiro™, iCR Chiro Dual™, iCR 3600™, iCR 3600SF™, iCR VERTX™, iCR Fusion™, Chrome™, Chrome Duo™

Any one of the following iCR products will be referred to as "iCR desktop unit" throughout this document: iCR VERTX™. The iDR™ and Fusion DR Mobile™ will be referred to as the "DR unit" throughout this document.

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Contact and Product Information

Contact Information

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Information

Please enter the details of the system here:

Serial Number:	
Date Purchased:	
Interface Type:	USB 2.0

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Safety Information

Read and understand the installation and operating instructions before starting the software.

Conventions

Warning:

A WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution:

A CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Note:

A NOTE indicates important information that helps you better utilize your CR Unit and Software.

Important:

An IMPORTANT indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

Malfunctioning Equipment

If any iCRco software product shows signs of malfunction, try restarting the computer; if the problem persists or is reproducible discontinue the use of the product immediately and contact Technical Support at 310-921-9559.

Mammography

Access to Clarity Viewer's mammography feature is controlled by the USB Dongle Key.

Clarity PACS

Clarity Viewer is a component of the 510(k) cleared Clarity PACS (K002911).

Indications for Use

Clarity Viewer is software that retrieves digital images and data from various sources (e.g. CT scanners, MR scanners, ultrasound systems, RIF Units, computed & direct radiographic devices, secondary capture devices, scanners, imaging gateways, or other imaging sources).

Images (including mammography) and data can be retrieved and displayed within the system and/or across computer networks at distributed locations.

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Clarity's archiving engine utilizes lossless algorithms for compression services (JLSL, J2KR, and JPLL). Lossless compressed mammographic images can be reviewed for primary image interpretation. Lossy compressed mammographic images received from outside sources and digitized film screen images must not be reviewed for primary image interpretation.

Mammographic images may only be interpreted using an FDA cleared monitor that offers at least 5 MP resolution and meets other technical specifications reviewed and accepted by FDA.

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iCRco Warranty

iCRco, Inc. ("iCRco") values your business and always strives to provide high-quality products and services. All iCRco products are provided with an initial warranty so that the hardware and software are covered from the date of purchase. This limited warranty solely applies to new products manufactured by or for iCRco and originally purchased from iCRco or an authorized dealer of iCRco products for your own use. In addition, an extended warranty is available for most new and recently purchased iCRco products for an additional charge.

Hardware Limited Warranty

iCRco warrants its hardware products to be free of defects in materials and workmanship for a period of one (1) year from the date of original shipment from iCRco subject to the limitations set forth herein. If a product proves to be defective in material or workmanship during the warranty period, iCRco will, at its sole option, repair or replace the product with a similar product. Repaired and replacement products may be or include refurbished or remanufactured parts. Any replacement item assumes the remaining warranty period of the original product. iCRco provides no warranty for any third party hardware or software included with any product or later acquired.

Software Limited Warranty/Support

iCRco warrants that its QPC XSCAN32, Captera, XC, and/or Clarity PACS software originally provided with any product will substantially conform to iCRco's specifications and that the media, not including hard drives, on which the software is furnished will be free from defects in materials and workmanship under normal use for a period of one (1) year from the date of original shipment from iCRco. iCRco's sole obligation under this warranty is limited to making reasonable efforts to ensure such conformity and to supply the consumer with a corrected version of the software as soon as it is practical after the consumer has notified iCRco of any nonconformity. iCRco does not warrant that the operation of any software will be uninterruptible, glitch- or error-free, or that functions contained in the software will operate in the combinations which may be selected for use by the user or meet the user's requirements. This limited software warranty will be void if the software is modified without the written approval of iCRco or is used outside of the recommended parameters or equipment. iCRco does not provide any warranty or support for any other software.

iCRco agrees to provide one (1) year of telephonic and/or e-mail-based support for QPC XSCAN32, Captera, XC, and/or Clarity PACS software originally provided with any new iCRco product from the date of original shipment from iCRco . All software support shall be limited to making reasonable efforts to resolve iCRco software issues and shall be limited to iCRco's regular business hours. In addition, iCRco will provide revisions and upgrades to its software upon request (when available) during the first year after the software was originally shipped from the iCRco factory. The initial support period will include support via remote login software, only if the customer has access to the Internet from that PC and only if the customer agrees iCRco shall have no liability in connection with its support efforts. Remote login software allows iCRco technical support to remotely access the customer's PC via the Internet for the purposes of rendering technical support. Please note that this warranty, including software support, does not include computer hardware, third party software, or operating system or network issues, which are outside the control of iCRco.

Warranty Product Technical Requirements

iCRco requires that all DR, CR, Scanner, and/or products requiring PCs be fitted and installed with a 1300VA (780W) uninterruptible power supply ("UPS"). iCRco recommends the APC 1300 specification UPS or equivalent. For warranty evaluation and service, iCRco requires the customer to provide an Internet connection (DSL or Dial-up) or the minimum of a phone line accessible by an extension cord to the product enabling iCRco technicians to perform remote diagnostics on installed equipment. In addition, each iCRco product must be installed, maintained, and operated in accordance with the respective product manual. Failure to comply with these requirements will result in a voided warranty claim.

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Requesting Warranty Service

For information on obtaining warranty service, call iCRco's customer support at (310) 921-9559. In order to evaluate a warranty service request, iCRco requires the following information: the iCRco serial number of the product, a detailed description of the problem, customer name and contact information, product location and operating conditions, a copy of the purchase documents, and sufficient information and authorization, including a liability release as to any loss of data (that should always be backed up), software or network injury, or downtime, allowing iCRco technicians remote access to the product. Product may not be returned to iCRco without first obtaining a Return Material Authorization ("RMA") number from iCRco . Prior to providing an RMA, iCRco may require remote access to the product. If iCRco determines that the product may be defective, is under warranty, and necessitates a return to iCRco for service, an RMA number and instructions for return of the product will be given. iCRco is not responsible for any unauthorized returned product, i.e. one for which an RMA number has not been issued by iCRco.

Warranty service requires all authorized returns be shipped to the iCRco factory prepaid and insured. All such authorized returns are the customer's responsibility. For products sold and located within the United States, iCRco will pay for return shipping.

Products being returned are only to be shipped in iCRco approved shipping containers. The original box and packaging materials are approved and should be kept for moving and/or shipping the product. Approved packaging may also be purchased from iCRco for an additional charge. iCRco shall have no liability nor responsibility for warranty service to any product that is not shipped in an iCRco approved shipping container, that is damaged from incorrect packaging, or that is damaged during shipping.

Additional Warranty Limitations and Extent of Warranty

This warranty does not apply if the product has been damaged by accident, misuse, or abuse. In addition, warranty service does not include the repair of failures or defects caused by: unauthorized attachments to any iCRco product, unsuitable physical or operating environment, maintenance or repair by anyone other than iCRco or the iCRco authorized dealer that sold the product, operation of a product beyond its duty cycle, use of the product outside of its specifications, the use of supplies, parts, materials, software, or interfaces not furnished, authorized, or recommended by iCRco . If the product, including any software has been opened, tampered with, modified, or altered in any way without written authorization by iCRco, the warranty will no longer apply.

This warranty applies only to products manufactured by, or for, iCRco; products can be identified by an "iCRco" serial number as originally affixed to the product. Any modification to the iCRco serial number tag or its attachment to the product shall immediately void the warranty.

This warranty is non-transferable and subsequent owners must contact iCRco to establish if the equipment is eligible for an extended warranty.

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Revision History

Revision	Date	Approved by	Comments
A	2009-04-06	MS	Initial release
B	2010-03-03	MS	Updated with 1.3 features
C	2010-07-08	MS	Added CE and FDA approval label
D	2010-10-05	MS	Updated with 1.4 features
E	2011-03-09	MS	Updated minimum computer requirements
F	2013-05-23	KS	Updated for 4.8 Release
F-02	2013-07-30	KS	Frontmatter Update
G	2013-07-31	KS	Updated for 4.10 Release
H	2013-12-20	KS	Feature Clarification
I	2014-01-10	KS	Updated for 4.12 Release

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Chapter 1

Introduction

Overview

Clarity is an easy to maintain, scalable, digital image, and information management solution. Clarity provides a secure, HIPAA-compliant image management and display for medical imaging modalities including: Computed Radiography (CR), Magnetic Resonance (MR), Computed Tomography (CT), and Ultrasound (US). The Clarity Archive provides DICOM services including DICOM storage, DICOM routing, and DICOM Modality Work List for patient information systems. The Clarity Archive also includes integration with most existing RIS and HIS systems. The Clarity Archive supports the HL-7 protocol allowing integration with many EMR systems.

The Clarity Viewer is a multi-modality image viewer designed to provide rapid and easy access to medical images. Multiple monitors are automatically detected and easily configured. An integrated Work List provides flexible search options such as filtering by patient ID, accession number, study ID, modality, study status, and many more. The Clarity Viewer provides robust and easy-to-use image manipulation and annotation tools including support for CR, DR, and cross-sectional imaging (e.g., US, CT & MR modalities).

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Chapter 2

Setup and Configuration

Local System Configuration

Minimum Viewing Workstation Configuration:

CPU: 2 GHz Core2Duo

System RAM: 4 GB (6 GB for non-CR diagnostic review)

Hard Drive: 200 GB

Graphics Card: 1280 x 1024/32-bit color capable graphics card

Monitor: High-contrast diagnostic quality monitor (two monitors recommended)

Operating System: Windows 7 Service Pack 1, 64-Bit

Java: Version 6 Update 14

Domain Configuration:

Note:

The User may access Clarity Viewer using a domain name, but the network must be properly configured. Please contact your system administrator to assign a domain name to the Clarity Viewer. Any Workstations wishing to access the Clarity Viewer via a domain name must be configured on the same Windows domain as the Archive. Domain misconfiguration may result in a non-functioning Clarity Viewer.

Firewall Configuration:

Workstations wishing to use the Clarity Viewer or DICOM Send and Query/Retrieve to the Clarity Archive need to have TCP ports 104 (DICOM), 8443 (Clarity launch page SSL port), and 11112 (Clarity Archive port) and UDP port 137 (data transfer) open in the Windows firewall and any third party hard and/or software firewalls running on the network.

Updates

When a new version of the Clarity Viewer has been deployed to the Clarity server, the Clarity Viewer software will automatically update itself from the Clarity server onto the Workstation on the next launch.

Launching the Clarity Viewer

Initial Installation and Launch of Clarity Viewer

1. Launch the web browser.
2. In the address bar, enter `https://IPADDRESS:8443/icrco-viewer` where

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```
IPADDRESS
```

is the IP address of the Clarity Archive.

Note:

It is recommended that the user register a domain name for the Clarity server and purchase an SSL certificate from a trusted Certificate Authority when using remote viewing. These actions help ensure secure data transmission.

Note:

If accessing Clarity through a secure local area network or VPN, the user can enter `http://IPADDRESS:8080/icrco-viewer` instead of the "https" address. This allows to user to avoid the browser security warning dialog.

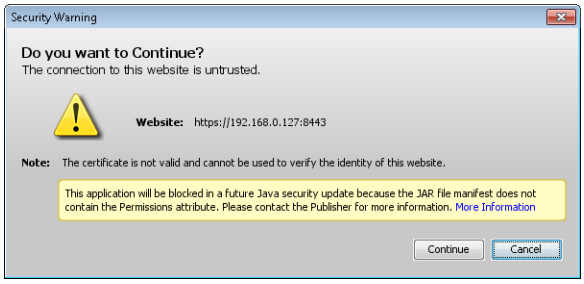
3. Click the **Launch** link to start the Clarity Viewer.
4. The dialog box `Opening launch.jnlp` will appear. Make sure the **Open with** radio dialog is selected and the drop-down box next to it says:

```
Java Web Start Launcher
```

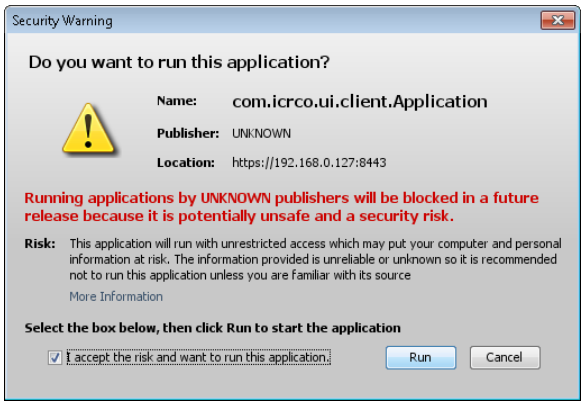
Click **OK** to continue.

Note:

You will have to click **Continue** when asked if you trust the Clarity website.


Security Warning
Do you want to Continue?
The connection to this website is untrusted.
Website: https://192.168.0.127:8443
Note: The certificate is not valid and cannot be used to verify the identity of this website.
This application will be blocked in a future Java security update because the JAR file manifest does not contain the Permissions attribute. Please contact the Publisher for more information. More Information
Continue
Cancel

5. Depending on the version of Clarity, a Java Security Warning might appear asking if the user wants to run the application. Check the box and select **Run**.


Security Warning
Do you want to run this application?
Name: com.icrco.ui.client.Application
Publisher: UNKNOWN
Location: https://192.168.0.127:8443
Running applications by UNKNOWN publishers will be blocked in a future release because it is potentially unsafe and a security risk.
Risk: This application will run with unrestricted access which may put your computer and personal information at risk. The information provided is unreliable or unknown so it is recommended not to run this application unless you are familiar with its source
More Information
Select the box below, then click Run to start the application
I accept the risk and want to run this application.
Run
Cancel

6. The Clarity Viewer will open and display a login dialog.

Note:

This process will only need to occur once on each workstation. After the initial installation of the Viewer, a shortcut will be placed on the desktop.

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Quick Launch of Clarity Viewer

After the initial installation of the Clarity Viewer, a shortcut to the application is placed on the User's desktop. To launch the Clarity Viewer, simply double mouse click on the desktop shortcut.

Logging In

After launching, the Clarity Viewer will open and present a login dialog box. Enter a User name and password, then click **OK** to continue.

Note:

The default username and password is "user" and "user".

Note:

If you do not have a User name and password, please contact your System Administrator.

LDAP Authentication

If the Clarity Archive is set up with LDAP (Lightweight Directory Access Protocol), then check the LDAP Auenthication box.

LDAP is used to allow user to have a single login account across multiple applications, commonly known as SSO (Single Sign-On). SSO integration with certain systems might require further configuration of Clarity. Contact iCRco for more information.

Clarity Server Selection

The login screen allows you to select which Clarity Archive you wish to access. This is useful if you have more than one Archive that you regularly use.

To add a new Archive to the list, click the drop-down arrow on the right side of the Server field. Select **Add Server**.

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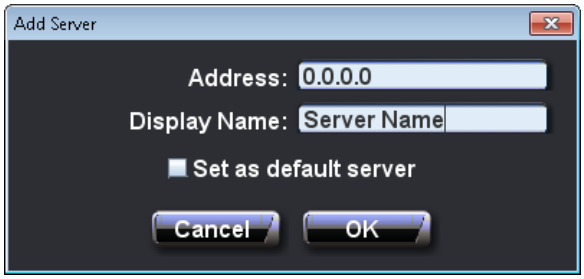
This will bring up the Add Server dialogue box.



You may enter in the Clarity Archive information including server address and the name you want displayed in the Login panel. It it possible to set the new archive as the default server listed when the Login dialogue appears. Simply check the default server box.

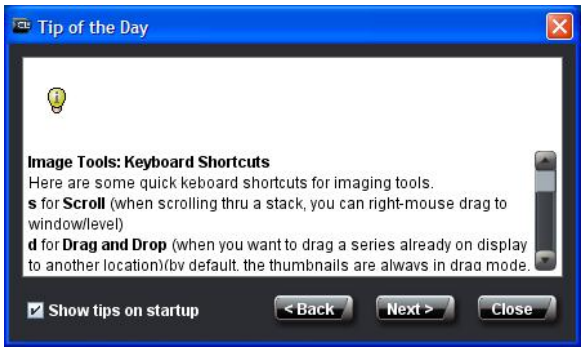
Click **OK.**

Note:

Upon logging in, the server you're currently connected to will be shown underneath the Clarity logo.

Tips

The Clarity Viewer will display a Tip of the Day when the application is started. The Tip of the Day gives the User helpful information to make using the Clarity Viewer easier.


Tip of the Day
Image Tools: Keyboard Shortcuts
Here are some quick keboard shortcuts for imaging tools.
s for Scroll (when scrolling thru a stack, you can right-mouse drag to window/level)
d for Drag and Drop (when you want to drag a series already on display to another location)(by default, the thumbnails are always in drag mode.
Show tips on startup
< Back
Next >
Close

The User can use the **Previous Tip** & **Next Tip** to display more tips.

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The **Close** button will close the Tip of the Day dialog box.

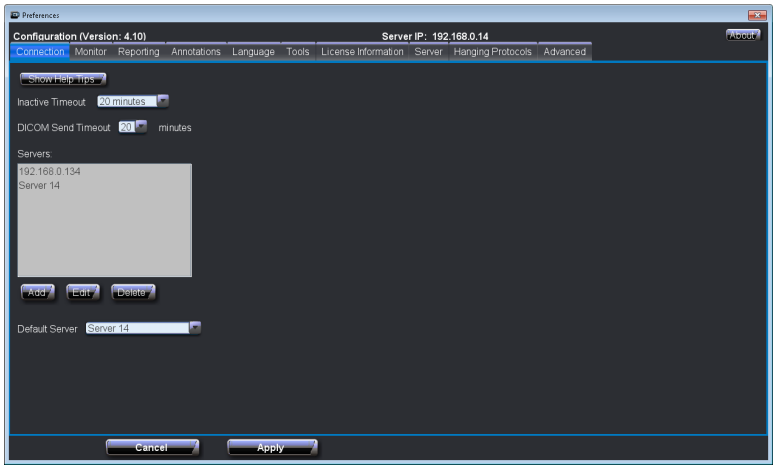
The User can disable the Tip of the Day by unchecking the **Show Tips on Startup** box.

To re-enable the Tip of the Day, see Section *Show Help Tips* on page 23.

Preferences

The preferences can be accessed by clicking on the **Configuration** button, located in the upper, right-hand corner of the Work List window. Clicking the **Configuration** button will cause the **Preferences** dialog to pop-up.

Connection



The Connection Tab in Preferences control the various settings related to digital communication between the Viewer and Archive. The user can control timeout, server selection, and help tip settings in this tab.

Show Help Tips

Clicking the **Show Help Tips** button will bring up the Tip of the Day window. Here the user can view the various tips or enable/disable the feature by checking or unchecking the **Show tips on startup** box.

Inactive Timeout

The Inactive Timeout preference allows the User to specify the length of time before the Clarity Viewer automatically logs out. To modify the Inactive Timeout preferences, click the Connection tab in the **Preferences** dialog. Select the desired length of time. The default duration is 20 minutes.

DICOM Send Timeout

The user can set how long Clarity PACS will attempt to DICOM Send a study to an Archive, before stopping due to timeout.

Servers Field

The Servers field lists the Clarity Archive servers currently registered on the view station. From this screen, a user can add, edit, or delete an archive from the list.

Default Server

The user can select which archive is the default server from the dropdown menu.

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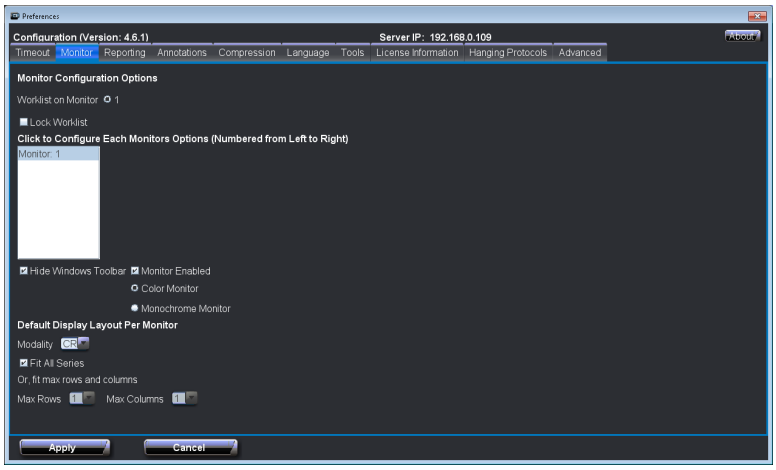
Monitor Configuration Options

The monitor preferences can be accessed by clicking on the **Configuration** button. This will bring up the **Preferences** dialog. From there, click the **Monitor** tab.



From the **Preferences** dialog, the User can configure each monitor attached to the computer. The monitors are numbered according to their Windows device configuration.

Note:

Changing monitor preferences will require a restart of the Clarity Viewer for the changes to take effect. The application will **not** restart on its own. The User will need to restart the application manually.

Work List on Monitor

The User may select which monitor the Clarity Viewer displays the Work List on. This is achieved by selecting the radio dialog check box to the left of the desired monitor. Click the **Apply** button to save the changes, then restart the Clarity Viewer for the changes to take effect.

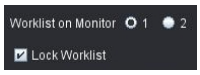
Monitor Configuration

The steps to configure a monitor are as follows:

1. Select the desired monitor from the monitor selection box.
2. If the monitor is not enabled, check the **Monitor Enabled** box.
3. Select if the monitor is Color or Monochrome (the default is color).
4. Click **Apply**. Quit and relaunch the Clarity Viewer for the changes to take effect.

Lock Worklist

This feature allows the User to select a specific monitor on which he wants to see the worklist. It makes the worklist always appear at the selected monitor. For enabling this feature, the circular box against **Worklist on Monitor** needs to be checked. For example, if the User wants to see the worklist on 1st monitor then he should check the circular box against monitor 1.



Hide Windows Tool bar

The User can choose whether to show or hide the Windows tool bar by checking or unchecking the preference check box. The check box is located directly below the monitor selection box. Selecting the check box will hide the Windows tool bar. If this check box is not selected, then the Windows tool bar will be displayed.

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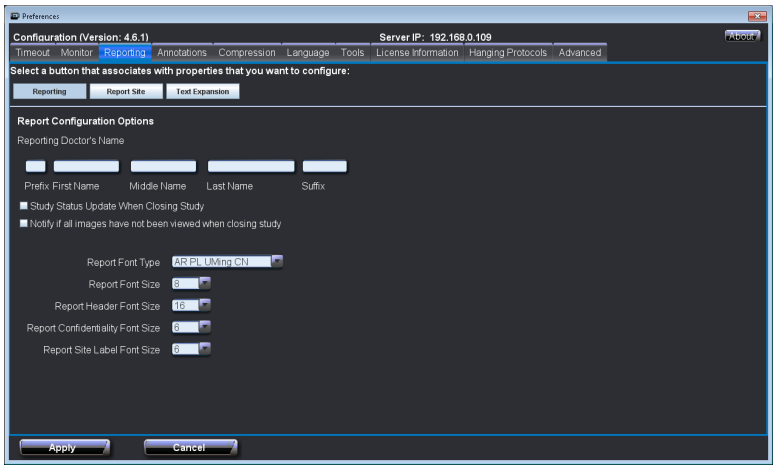
Default Display Layout Per Monitor

The User can choose, on a per modality basis, how series of images are laid out on screen. If the **Fit All Series** box is checked, the Clarity Viewer will display every series from the selected patient on the screen. If the **Fit All Series** box is not checked, the user may choose the maximum number of rows and columns of series of images to display.

Reporting

The Reporting preferences can be accessed by clicking on the **Configuration** button. This will bring up the **Preferences** dialog. From there, click the **Reporting** tab.



Reporting Doctors Name

In the **Report Writer** tab, the User may set the name of the physician that will appear in the report.

Note:

This is a per User setting. Each User can have his or her own name to appear in the report. Only Users with the user privileges of "doctor" can write reports. Please see the Clarity Configuration & Troubleshooting Manual for more information on creating new users and setting user privileges.

Study Status Update When Closing Study

When this option is checked, upon closing an image from the **Viewer**, a dialog box will appear asking the User to update the Study Status:

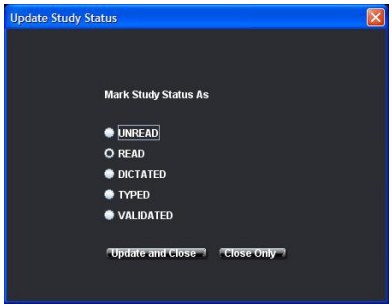


Figure 1: The Update Study Status dialog pops-up after closing a study in the Viewer window.

This option works in conjunction with the Filter Modifiers and Study Status workflow options present in the Work List window.

Options

Update and Close: Updates the study status to the selected value, e.g. "Read", then close the study.

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Close Only: Closes the study without changing the study status.

If a report is written with the option enabled, upon clicking the **Create** button, the report will be generated, the current patient will close, the study status will be set to **Validated** and the next patient in the worklist will be selected.

Notify if all studies have not been viewed

When this option is checked, if all images in the study have not been viewed, the Clarity Viewer will display a warning dialog notifying the User.

Report Font Type

The User may configure the body text font face used when writing reports in the Clarity Viewer. Select the desired font from the drop-down menu. Click the **Apply** button to save the changes.

Report Fonts Size

The User may configure the body text font size used when writing reports in the Clarity Viewer. Select the desired font size from the drop-down menu. Click the **Apply** button to save the changes.

Report Header Font Size

The User may configure the header text font size used when writing reports in the Clarity Viewer. Select the desired font size from the drop-down menu. Click the **Apply** button to save the changes.

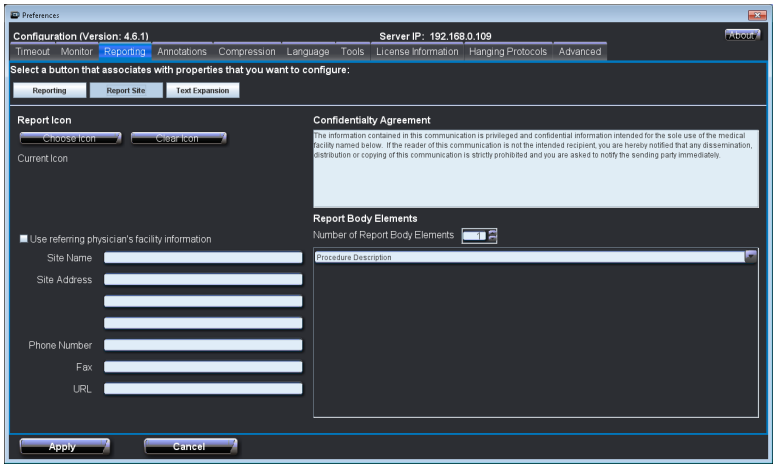
Report Confidentiality Font Size

The User may configure the Report Confidentiality text font size used when writing reports in the Clarity Viewer. Select the desired font size from the drop-down menu. Click the **Apply** button to save the changes.

Report Site Label Font Size

The User may configure the Report Site Label text font size used when writing reports in the Clarity Viewer. Select the desired font size from the drop-down menu. Click the **Apply** button to save the changes.

Report Site



Report Icon

Clicking the **Choose Icon** button will allow the User to select a JPEG, GIF, or PNG file of the practice or site logo to be placed in the report header. Clicking the **Choose Icon** button will bring up a file upload dialog from which the User may select the site logo. After selecting the desired graphic, click the **Save** button to save the icon. The **Clear Icon** button removes the current icon, allowing for the upload of a new icon.

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Current Icon

Displays a preview of the current icon that is displayed in the Report header.

Site Name

Enter the Site or Practice name in the text field.

Site Address

Enter the Site or Practice address in the text field.

Phone Number

Enter the Site or Practice phone number in the text field.

Fax

Enter the Site or Practice fax number in the text field.

URL

Enter the Site or Practice website address in the text field. For example: `http://www.icrcompany.com`

Confidentiality Agreement

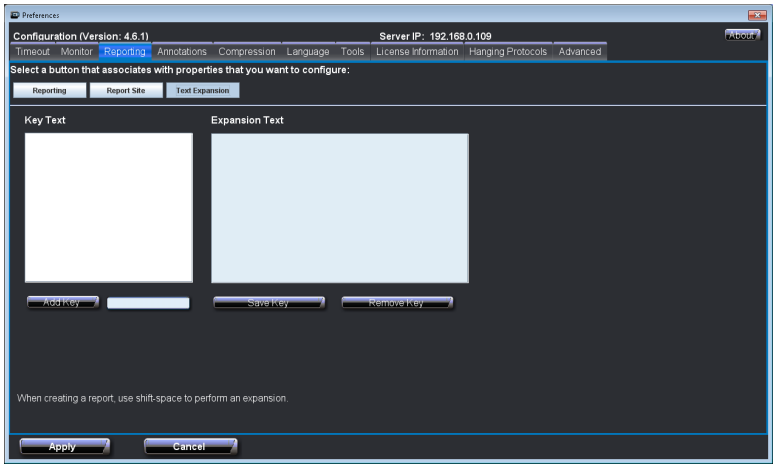
Enter the Site or Practice confidentiality agreement text in the text field.

Report Body Elements

The **Report Body Elements** allows the User to customize the elements in a Report. Each element can only appear once in a report (an **element** is Impressions, Findings, Procedure Description, Conclusions, etc.) Select the number of elements to appear in a report in the **Number of Report Body Elements** box, then select the heading for each element (For example, Impressions, Findings, Conclusions, etc).

Text Expansion

This feature facilitates the User to set a **Key Text** and its **Expansion Text**. The advantage of this feature is that the User just has to type the **Key Text** while writing a patient report and the application automatically pulls up its **Expansion Text**.



To use this feature, see the following steps:

1. Type a **Key Text** against the **Add Key** button and click **Add Key**.
2. The **Key Text** just added gets displayed under **Key Text**.
3. Select this **Key Text** and click in the box provided under **Expansion Text**

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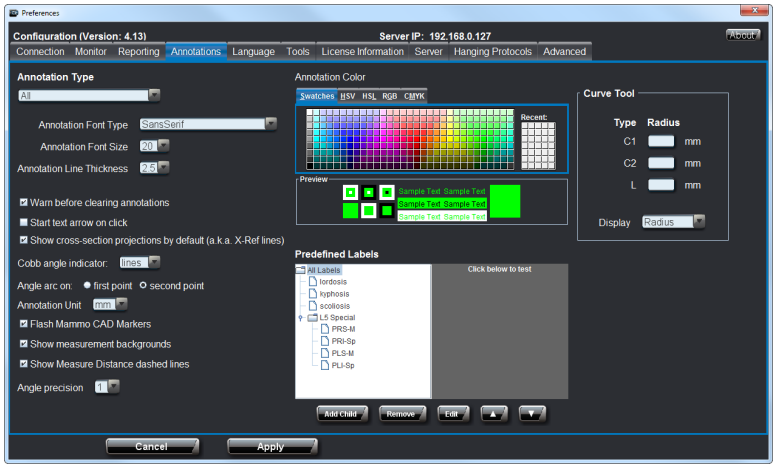
4. Type in the details for the **Key Text** and click **Save Key**.
5. Select a **Key Text** and click **Remove Key** to delete the **Key Text**.
6. Click **Apply** and restart the Clarity Viewer to make the changes effective.
7. To use this feature:
    1. Select a patient from the worklist and open any image.
    2. Click the **Reports** button on the left panel and the click **Write Report**.
    3. Type the **Key Text** wherever you want the **Expansion Text**.
    4. Press **Shift Key** + **Space Bar**.
    5. The **Key Text** will be converted into **Expansion Text**

Annotation Options



The Annotation Options allow the User to set the font, font color and size, annotation line thickness, and annotation color. The User may apply these options to all annotations at once (by selecting **All** from the **Annotation Type** drop-down menu), or the User may select the type of annotation, and set the parameters individually for each annotation type.

Annotation Type

Using the **Annotation Type** drop-down menu allows the User to select configuration parameters for each individual annotation tool, or set the parameters for all tools at once (select **All** in the **Annotation Type** drop-down menu).

Annotation Font Type

Allows the User to select any font installed on the operating system to display annotations using text.

Annotation Font Size

Allows the User to select the font size for annotations using text. The User may choose a font size between eight (8) and twenty (20) points.

Annotation Line Thickness

Allows the User to select a value between one-half (0.5) and four (4.0) for the thickness of the annotation lines.

Annotation Color

Allows the User to select the color for the annotation lines and text. The User may select from swatches (commonly used, pre-defined colors) by clicking on a swatch color, HSB (**H**ue, **S**aturation, and **B**rightness) by selecting a point somewhere in the colored square, or RGB (**R**ed, **G**reen, and **B**lue) by adjusting the sliders to the desired result.

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Preview

The **Preview** box will preview the selected colors, so the User may see how it looks before saving the preferences.

Curve Tool

The user can set the radius for the reference curves used in the Curve tool. The radius can be selected for the C1 - T1 Cervical Curve (C1), the C2 - C7 Cervical Curve (C2), and the Lumbar Curve (L). To set the radius, click the corresponding box and type in the desired radius in millimeters.

The Display dropdown box allows you to select whether you want the Curve Tool to display the curve's angle measurement, the curve's radius measurement, or both measurements.

Note:

The Curve Tool is part of the Advanced Tools. This setting will be greyed out if the Advanced Tools feature is not activated on the dongle license.

Warn before clearing annotations

When this box is checked, Clarity will notify the user before annotations are removed.

Start text arrow on click

When this box is unchecked, drawing an arrow annotation begins with the end of the arrow. When the box is checked, drawing an arrow annotation begins with the arrow head.

Show cross-section projetions by default

When this box is checked, the cross-reference lines will automatically appear when viewing images.

Cobb angle indicator

The user may select whether the Cobb angle uses lines, an arc, or neither.

Angle arc

The user can choose which angle is measured when selecting three points. If the first point setting is chosen, then the angle will measure the angle where the first point is the vertex. If the second point setting is chosen, then the angle will measure the angle where the second point is the vertex.

Annotation unit

The user may choose the unit of measurement.

Flash Mammo CAD Markers

If the box is checked, mammography images will flash the CAD markers on the image when it is loaded.

Show measurement backgrounds

When this box is checked, the measurements will be displayed in a small, white bubble field.

Show Measure Distance dashed lines

When checked, the measured distance will be indicated with a dashed line. When unchecked, only the measurement will be displayed.

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Angle precision

The angle precision drop-down menu allows you to select how many digits past the decimial point to display in an angle measurement. For example, if an angle measured 141.59°, Clarity will display:

- 0 Digits - 142°
- 1 Digit - 141.6°
- 2 Digits - 141.59°

Predefined Labels

This tool allows you to set up predefined labels, which can be placed on an image using the Advanced Tools.

To add a label, select a folder and click the **Add Child** button. Type in the label text and click **OK**.

Note:

To create a new folder, click the **Add Child** button. Name the label. Then add a child to the label you just created. This will convert the label to a folder.

To remove a label or folder, select the item and click **Remove**.

Note:

Removing a folder will delete the folder and all labels within it.

To edit the name of a label or folder, select the item and click **Edit**.

It is possible to reorder the predefined label list by using the up and down buttons. Select the item you wish to move, then click either button to move it.

Note:

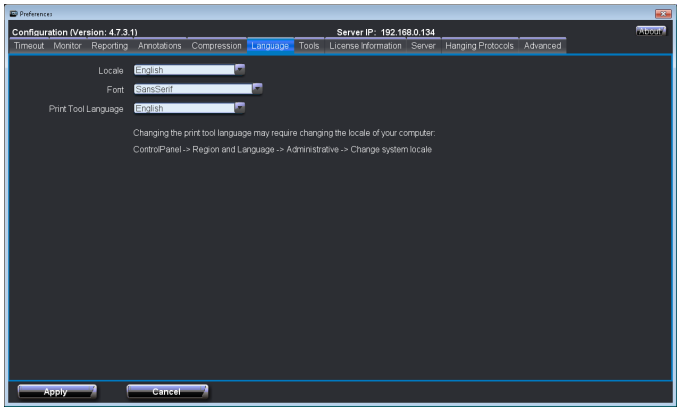
If you click within the grey testing area, you can see what the predefined label menu will look like.

Note:

Predefined Labels is part of the Advanced Tools. This setting will be greyed out if the Advanced Tools feature is not activated on the dongle license.

Language Options

The Language options can be accessed by clicking on the **Configuration** button. This will bring up the **Preferences** dialog. From there, click the **Language** tab.



Locale

Setting the locale will set the language, text orientation (left to right or right to left), and date & time for the given region. Currently supported locales are: Chinese, English, German, Hindi, Japanese, Portuguese, Serbian, Spanish, and Thai.

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Font

The font option allows the User to select the font face for the application. This includes the font face for the Work List and all dialog boxes inside the Clarity Viewer application, but does not include annotation fonts which are set separately in the **Annotations** tab. See Section *Annotations* on page 54 for more information on setting Annotation fonts.

Print Tool Language

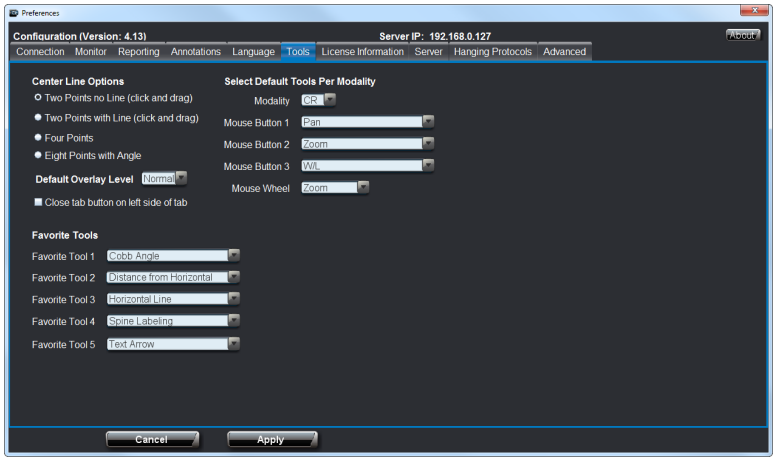
The user may choose which language the QPC Print Tool uses.

Note:

It may be necessary to change the computer's locale in order for QPC Print Tool to properly display the selected language.

Tools Options

The Tools options can be accessed by clicking on the **Configuration** button. This will bring up the **Preferences** dialog. From there, click the **Tools** tab.



Center Line Options

The Center Line tool has four different drawing options. The options are: Two Points without Line, Two Points with Line, Four Points, or Eight Points with Angle. Please see Section *Center Line Options* on page 31 for the differences between each Center Line option.

Default Overlay Level

The user may select the amount of information displayed in the corner of the image.

- None - No text is displayed.
- Normal - Minimal text is displayed.
- Full - A large amount of text is displayed.

Close tab button on left side of tab

If this box is checked, the close button "X" will be relocated to the left side of the tab.

Select Default Tools Per Modality

Selecting the default tools per modality allows the User to override the default mouse button mapping described in Section *Default Mouse Actions* on page 44. First select the desired modality, then choose the desired mouse

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button mapping. For example, for the CT modality, the user may want to map Pan to the left mouse button, map Zoom to the middle mouse button, map W/L to the right mouse button, and map Zoom again to the mouse wheel.

Favorite Tools

It is possible to choose which tools appear in the Favorite Tools section of the toolbar. There are five available slots in the toolbar. Use the dropdown menu to select the desired tool. After the configuration has been applied, the selected tools will appear in the toolbar.

Note:

This feature was formerly known as Frequently Used Tools.

License Information

This tab will display the software serial number, sales order number, number of modality inputs, number of LAN and Web viewers, and enabled Clarity modules. This information is especially important when contacting Technical Support.

Server

The server tab displays Clarity's server information. The data here cannot be modified.

Hanging Protocols

The Hanging Protocols tab allows the user to modify anatomy window/level presets and manage saved protocols.

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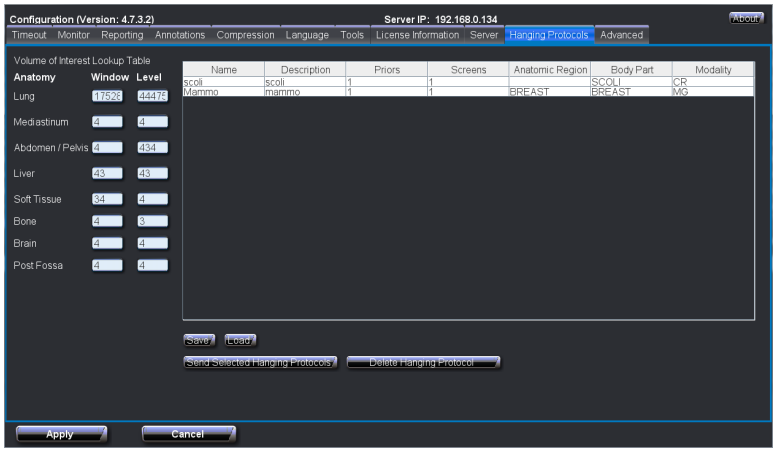
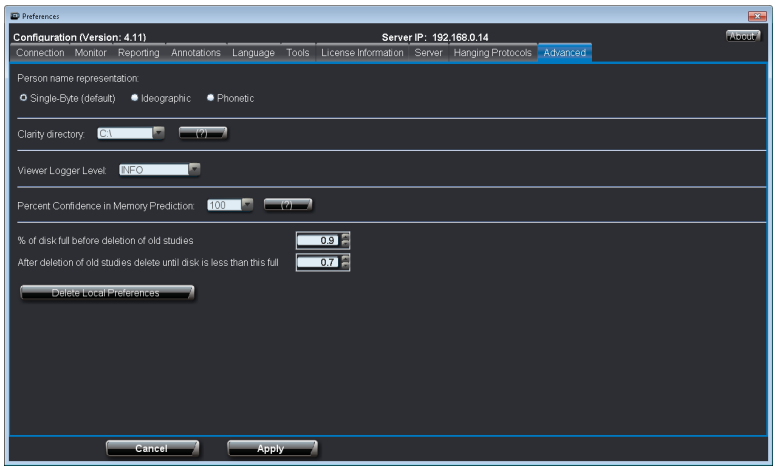

Configuration (Version: 4.7.3.2)
Server IP: 192.168.0.134
About
Timeout Monitor Reporting Annotations Compression Language Tools License Information Server Hanging Protocols Advanced
Volume of Interest Look-up Table
Anatomy Window Level
Lung 17526 44475
Mediastinum 4 4
Abdomen / Pelvis 4 434
Liver 43 43
Soft Tissue 34 4
Bone 4 3
Brain 4 4
Post Fossa 4 4
Name Description Priors Screens Anatomic Region Body Part Modality
scoli scoli 1 1 SCOLI CR
Mammo mammo 1 1 BREAST BREAST MG
Save Load
Send Selected Hanging Protocols
Delete Hanging Protocol
Apply
Cancel

On the left side of the window, the user can set the presets for the window/level settings for each anatomy. The specific value can be modified in each of the anatomy's fields.

On the right side of the window, Clarity displays all of the saved hanging protocols, providing information such as description, anatomic region, and modality for each protocol. From this screen, the user may save protocols as a DICOM file, allowing the user to transfer protocols to another Clarity server. It is also possible to DICOM Send the Hanging Protocol settings or load existing hanging protocols from a DICOM file. If the user desires, a preset can be deleted.

Advanced

The Advanced tab allows the users to select the desired representation for person names, auto-advanced worklist, viewer logger level, image cache drive and percent confidence in memory prediction.


Preferences
Configuration (Version: 4.11)
Server IP: 192.168.0.14
About
Connection Monitor Reporting Annotations Language Tools License Information Server Hanging Protocols Advanced
Person name representation:
Single-Byte (default) Ideographic Phonetic
Clarity directory: C:\
Viewer Logger Level: INFO
Percent Confidence in Memory Prediction: 100
% of disk full before deletion of old studies 0.9
After deletion of old studies delete until disk is less than this full 0.7
Delete Local Preferences
Cancel
Apply

Desired Representation for Person Names

The person names can be written in three different characters. The user can select any representation out of **Single-Byte (which is default), Ideographic, and Phonetic** to get the desired display of the person name.

Clarity Directory

The Clarity Directory setting allows the user to determine the location of the Clarity root directory. Changing the directory will change where the cache files are saved. After switching to a new directory, restart Clarity.

Important:

Changing to a new directory will delete the cached files in the old directory.

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Note:

The default directory is C:\. If the permission settings on the computer do not allow data to be written to the C Drive, then Clarity will use the APPDATA location. Clarity directories written to APPDATA can be found under C:\Documents and Settings\[username]\Application Data\ICRCO on Windows XP and C:\Users\[username]\AppData\Roaming\ICRCO on Windows 7. The APPDATA folder is hidden by default on Windows.

Note:

The pre-fetch feature will only work with the C Drive.

Note:

Clarity Light Viewer will always use APPDATA and the directory cannot be changed.

Viewer Logger Level

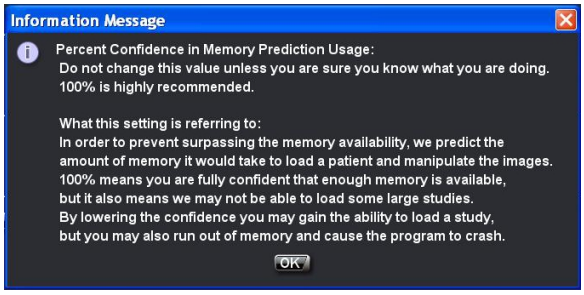
The User can select the Viewer Logger Level as **Debug, Info, Warn, Error, and Fatal**. By default, **Info** is selected and it means that the log report for Clarity viewer will include all the logger levels provided below the Info level in the combo box. So, the log report shows all the levels below the selected level in the combo box including the selected level itself in the log report. So, if the user selects Debug level, then all the levels will be shown in the log report.

Percent Confidence in Memory Prediction

This option is set to 100 by default. To get more information on what it actually is, click on the button having (?) on it. An **Information Message** box pops out giving the details about percent confidence in memory prediction.

Important:

It is highly recommended that this value remain at 100 percent. If necessary, the value should only be modified by qualified personnel.

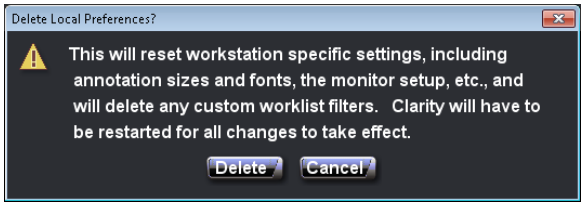

Information Message
Percent Confidence in Memory Prediction Usage:
Do not change this value unless you are sure you know what you are doing.
100% is highly recommended.
What this setting is referring to:
In order to prevent surpassing the memory availability, we predict the
amount of memory it would take to load a patient and manipulate the images.
100% means you are fully confident that enough memory is available,
but it also means we may not be able to load some large studies.
By lowering the confidence you may gain the ability to load a study,
but you may also run out of memory and cause the program to crash.
OK

Percent of Disk Full before Deletion

Clarity automatically caches opened studies, eventually filling up the cache. In order to prevent the cache from filling to capacity, the program will automatically trim older images.

The user can modify when Clarity will begin deleting older images and how much space it will try to free up.

It is possible to delete local preferences stored in the Windows registry such as monitor layout and user preferences.


Delete Local Preferences?
This will reset workstation specific settings, including
annotation sizes and fonts, the monitor setup, etc., and
will delete any custom worklist filters. Clarity will have to
be restarted for all changes to take effect.
Delete
Cancel

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About Button

The About This Software dialog can be accessed by clicking on the **Configuration** button. This will bring up the **Preferences** dialog. From there, click the **About** button on the top, right corner. The About button will pop-up the End User License Agreement for the Clarity Viewer application.

Warning Lights

Clarity will display warning lights when the warranty is expiring, when the dongle license is expiring, and when the disk storage is approaching maximum capacity.

It is possible to hide the warning lights by clicking the "X" to the right of the warnings. The lights will appear each time Clarity starts.

Expired Warranty

When the user's warranty is about to expire, Clarity will notify the user the number of days until expiration. The warning message is displayed at the top, left corner of the screen. To renew the warranty, call (310) 921-9559.

Note:

The warning message color will vary depending on the time until expiration.

- Yellow - Will expire within 45 Days
- Orange - Will expire within 30 Days
- Red - Will expire within 14 Days and after expiration

License Expiration

The Clarity Viewer uses a dongle licensing verification system. When the user's license is about to expire, Clarity will notify the user the number of days until expiration. The warning message is displayed at the top of the screen. To update the dongle license, the user should contact the dealer or iCRco by calling (310) 921-9559.

Note:

The warning message color will vary depending on the time until expiration.

- Yellow - Will expire within 45 Days
- Orange - Will expire within 30 Days
- Red - Will expire within 14 Days and after expiration

Disk Storage Space

When your Clarity Archive begins to approach maximum capacity, Clarity will display a warning message at the top of the screen.

When the user receive this message, iCRco recommends that the user's Clarity PACS be upgraded. Call iCRco at (310) 921-9559.

Note:

The warning message color will vary depending on how full the archive is.

- Yellow - When the Archive is 90 percent full or greater
- Orange - When the Archive is 93 percent full or greater
- Red - When the Archive is 95 percent full or greater

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Logging Out & Quitting

To log out of the Clarity Viewer, click the **Log Out**

button, located in the upper, right-hand corner of the Work List window. Logging out of the Viewer leaves the application open, but will require the User to enter a name and password to be able to access data again.

To quit the Clarity Viewer, click the **Quit**

button, located in the lower, right-hand corner of the Work List window. Quitting the Viewer means the User will have to re-open the application to access data again.

To minimize the Clarity Viewer, click the **Minimize**
button, located in the lower, right-hand corner of the Work List window. Minimizing the Viewer allows the user to hide the Viewer without exiting the program. This can be useful if the user needs to utilize other programs and doesn't want to quit out of Clarity.

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Chapter 3

Operation and Usage

Workflow Controls

Note:

Workflow control buttons may appear grayed out a certain times. A grayed out Workflow button means that the User may not use the button's function at the present time (e.g., when exporting images, the Clarity Viewer can not be quit, thus the quit button is grayed out).

Work List

The Work List button

returns the User to the Work List window.

Viewer

The Viewer button

returns the User to the Image Viewing window.

Send/Save Study

From the Work List:

Clicking the **Send Study** button

with patient{s} selected in the Work List will bring up the DICOM Send dialog. The user will need to click "Yes" when the program opens a dialog box asking if the user wants to continue. From the DICOM Send dialog, the User may DICOM send the studies to a different target, and configure new targets.

From the Image Viewing Window:

Clicking the **Save Study** button

while in the Viewer allows the User to save image manipulation settings (sans Pan and Zoom settings) and annotations. The User may save multiple different sets of annotations on the same image.

Write CD

The Write CD button

opens the dialog to export the selected studies and images to a CD/DVD. The user will need to click "Yes" when the program opens a dialog box asking if the user wants to continue.

Print

The Print button

opens the current image(s) with the DICOM print application.

Quit

The Quit button

exits & closes the Clarity Viewer.

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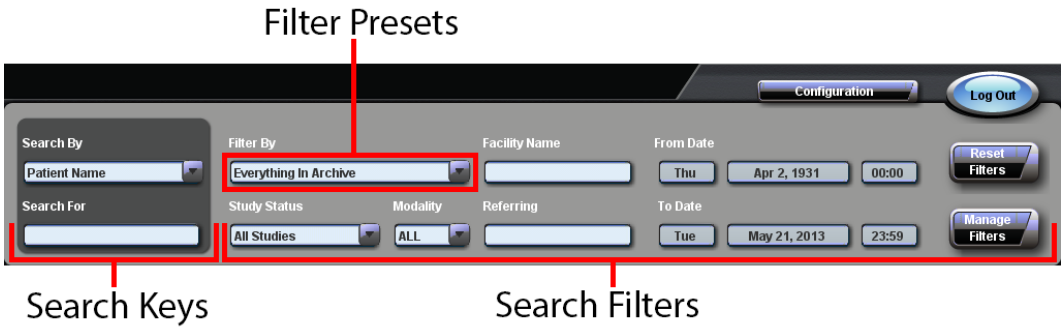
Minimize

The Minimize button hides the Clarity window without exiting the viewer.

Search



Search Keys

The Search Keys, located in the upper, left-hand corner, allow the User to search by patient last name, patient ID, accession number, or study ID. Select one of these from the **Search By** drop-down menu, and then enter the search criteria in the **Search For** box below. As soon as the User begins typing, the results of the search will appear in the **Patient / Study Search Results** Work List, located near the middle of the screen.

Search Filters

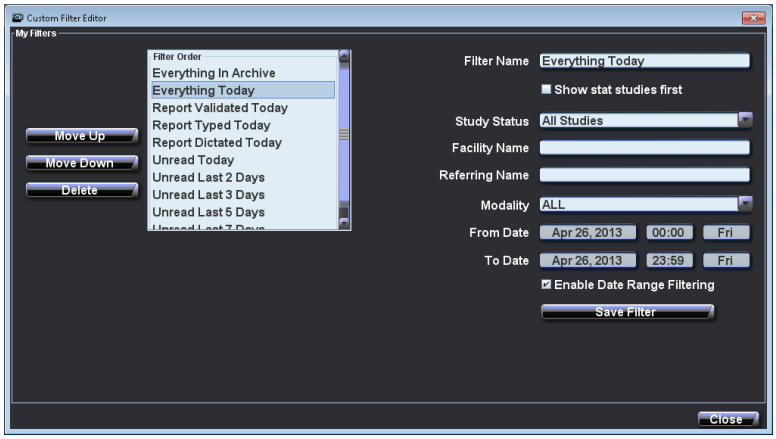
Search Filters are used in conjunction with Search Keys to help narrow the results of a search. The Search Filters can filter by study status, modality, facility name, date, and/or referring physician.

Filter Presets

Filter Presets are user-defined, allowing the User to define an optimal workflow. The Filter Presets can be accessed in a drop-down menu in the upper left part of the Search Filters box. Clicking the drop-down menu will reveal a list of the default Search Filters.

Creating and Editing Filter Presets

The User can edit & define new Filter Presets by clicking on the **Manage Filters** button.



Note:

The default filters cannot be modified.

New Filter Preset:

1. From the **Work List** Window, click Manage Filters.
2. Enter the desired filter name in the **Filter Name** text box. Make sure the new name is not already entered as a filter name.
3. Enter the desired filter criteria. The User does not have to fill in all filter criteria, e.g., if the User desired a filter for all CR studies, then select the modality from the **Modality** drop-down menu, and select the date ranges.
4. Click the **Save Filter** button.

Editing a Filter Preset:

1. From the **Work List** Window, click **Manage Filters**.
2. Highlight the filter to edit in the **Filter Order** box.

Note:

Default filters cannot be edited.

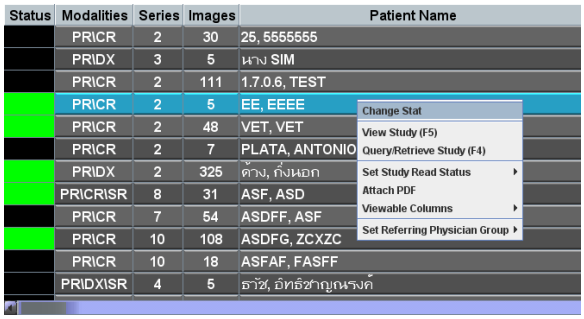
3. Edit the desired Filter criteria.
4. Click the **Save Filter** button.

Show Stat Studies First

When the user checks this option, the filter will automatically reorder the studies so that studies marked as "stat" are shown at the top of the list.

Note:

It is possible to mark a study as "stat" by right-clicking on the study in the worklist and selecting **Change Stat**. To unmark a study, simply select **Change Stat** on the study once more.



Enable Date Range Filtering

This option directs the filter to only display studies within a specified date range.

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Work List

Sorted Studies

Sorted Studies appear below the Search Keys & Filters. Sorted Studies show the studies that match the criteria specified in the Search Keys & Filters.

Grouped Studies

Note:

The Grouped Studies work list will only appear with screen resolutions of 1280 x 1024 or above.

Grouped Studies appear below the Sorted Studies. The Grouped Studies show all the studies from a patient selected in the Sorted Studies Work List.

Thumbnails

The thumbnail previews are shown at the bottom of the screen when a study is selected in either the Sorted Studies or Grouped Studies Work List.

Status

The Status column uses colors to indicate the current loading state of the study.

- Black - The image is located on the server.
- Blue - The image is queued to be downloaded from the server.
- Yellow - The image is currently downloading from the server.
- Green - The image has been retrieved from the server and is stored in the cache. It can be viewed.

Note:

It is possible to query and retrieve multiple studies without opening them.

Viewing Selected Studies

From the Work List:

To view a selected study, the User may double click the desired study in the Sorted or Grouped Studies, or the User may double click the preview thumbnail at the bottom of the Work List.

From the Image Viewer window:

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To view a selected study, mouse over the bottom part of the window to reveal the thumbnails associated with the study, then drag and drop the desired image into the image manipulation window and the image will load.

Lossless and Lossy Images

Clarity uses lossless algorithms for image compression. The software supports JPEG-LS Lossless (JLSL), JPEG 2000 Lossless (J2KR), and JPEG Lossless (JPLL) compression services. Lossless compressed images can be used for primary image interpretation.

It is possible for Clarity to receive images from outside sources that were compressed using lossy compression services. The software can accept JPEG Lossy (JPLY) images from other sources, but does not apply this compression service. Lossy images may not be used for primary image interpretation.

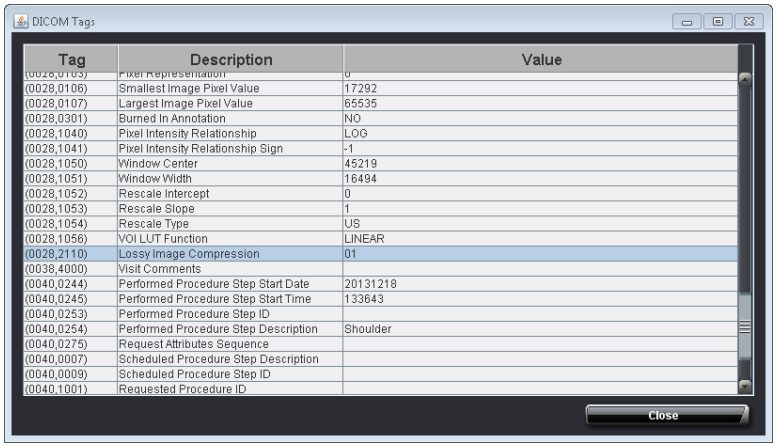
The user may determine if a lossy compression service was used on an image by checking the DICOM tags. To check:

1. Open the image in the Viewer.
2. Press **Ctrl + D** on the keyboard. This will open a dialog box with the list of the image's associated DICOM tags.
3. Locate the DICOM tag labeled **(0028,2110)**. This is the Lossy Image Compression tag.

Note:

If this tag does not exist, the image was not subjected to lossy compression.

4. If the tag exists, examine the tag's value. If the value is 00, then the image was not subjected to lossy compression. If the value is 01, then the image was subjected to lossy compression and may not be used for primary image interpretation.


DICOM Tags
Tag
Description
Value
(0028,0106) Smallest Image Pixel Value 17292
(0028,0107) Largest Image Pixel Value 65535
(0028,0301) Burned In Annotation NO
(0028,1040) Pixel Intensity Relationship LOG
(0028,1041) Pixel Intensity Relationship Sign -1
(0028,1050) Window Center 45219
(0028,1051) Window Width 16494
(0028,1052) Rescale Intercept 0
(0028,1053) Rescale Slope 1
(0028,1054) Rescale Type US
(0028,1056) VOI LUT Function LINEAR
(0028,2110) Lossy Image Compression 01
(0038,4000) Visit Comments
(0040,0244) Performed Procedure Step Start Date 20131218
(0040,0245) Performed Procedure Step Start Time 133643
(0040,0253) Performed Procedure Step ID
(0040,0254) Performed Procedure Step Description Shoulder
(0040,0275) Request Attributes Sequence
(0040,0007) Scheduled Procedure Step Description
(0040,0009) Scheduled Procedure Step ID
(0040,1001) Requested Procedure ID
Close

Prefetch Configuration

Prefetch sets up Clarity so that it automatically downloads studies based on a specified criteria. This criteria can be set and customized by the user.

The downloaded studies, because they are cached, will open quicker than studies that will have to be downloaded when opened.

Prefetch Installation

Prefetch can only be installed by a qualified iCRco service engineer. Contact iCRco for assistance.

Accessing Prefetch

To access the Prefetch settings:

1. Launch a web browser.
2. In the address bar, enter `https://IPADDRESS:8443/Prefetch` where

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```
IPADDRESS
```

is the IP address of the Clarity Archive.

Associate Filter to Workstation

The followings steps assume that the desired workstation(s) and filter(s) have been entered into the Prefetch. If they need to be added, see the **Create Prefetch Filter** and **Enter Workstation Information** sections below.

Note:

Complete the steps in this section and the **Setting Up Prefetch Deployer** section in order to activate Prefetch settings with the Viewer.

1. Select the workstation from the **Machine Name** dropdown menu in the Filter Machine Map box.
2. Select the desired Filter from the **Filter Name** dropdown menu.
3. Click the **Add** button at the bottom of the box.

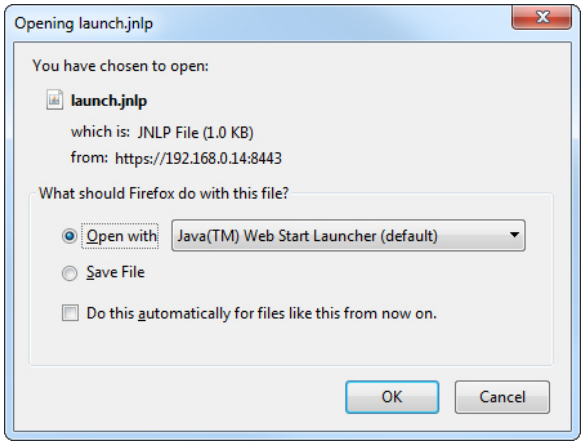
Setting Up Prefetch Deployer

To activate the new filter, you need to run the Prefetch Deployer on the workstation(s).

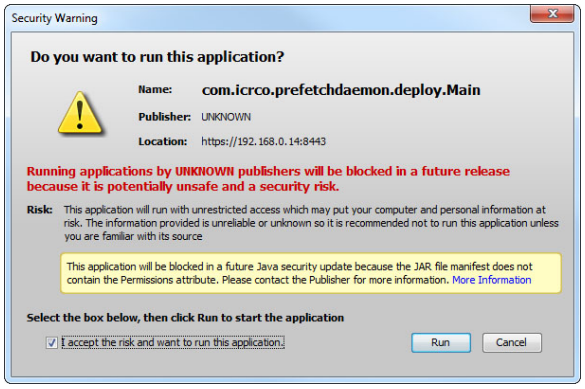
1. Select **Run Prefetch Deployer**.
2. The dialog box `Opening launch.jnlp` will appear. Make sure the **Open with** radio dialog is selected and the drop-down box next to it says:

```
Java Web Start Launcher
```

Click **OK** to continue.



3. Depending on the version of Clarity, a Java Security Warning might appear asking if the user wants to run the application. Check the box and select **Run**.


Security Warning
Do you want to run this application?
Name: com.icrco.prefetchdaemon.deploy.Main
Publisher: UNKNOWN
Location: https://192.168.0.14:8443
Running applications by UNKNOWN publishers will be blocked in a future release because it is potentially unsafe and a security risk.
Risk: This application will run with unrestricted access which may put your computer and personal information at risk. The information provided is unreliable or unknown so it is recommended not to run this application unless you are familiar with its source
This application will be blocked in a future Java security update because the JAR file manifest does not contain the Permissions attribute. Please contact the Publisher for more information. More Information
Select the box below, then click Run to start the application
I accept the risk and want to run this application.
Run
Cancel

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4. When asked if you trust the Clarity website, click **Continue**.

Security Warning
Do you want to Continue?
The connection to this website is untrusted.
Website: https://192.168.0.14:8443
Note: The certificate is not valid and cannot be used to verify the identity of this website.
This application will be blocked in a future Java security update because the JAR file manifest does not contain the Permissions attribute. Please contact the Publisher for more information. More Information
Continue
Cancel

5. Allow the program to install the Clarity file.
6. Upon completion, the a dialogue box will appear saying that Clarity Prefetch was successfully installed.

Create Prefetch Filter

To create a filter:

1. Type the filter's name in the Name field in the Prefetch Filters box.
2. Select the desired filter settings.

Note:

For example, to set up a filter that will cache studies created in the last 24 hours:

Name: Filter A

Modality: All

Start Date: One day ago

End Date: Now

3. Click the **Add** button at the bottom of the Prefetch Filters box.

Enter Workstation Information

To activate prefetch filters, the workstation's IP information is needed.

1. Type the name of the workstation in the Name field in the Prefetch Machines box.
2. Type the IP Address of the workstation in the IP Address field.

Note:

The workstation must have a static IP address.

3. Click the **Add** button at the bottom of the box.

Prefetch Update

It is possible to update the Filter or Workstation information in the Prefetch lists.

1. Find the Filter or Workstation on the list, then modify the desired setting.
2. Click the **Update** box to the right of the modified entry.

Prefetch Removal

To remove a Filter, Workstation, or Filter/Workstation Association from Prefetch, simply click the **X** button to the right of the entry you wish to remove.

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Image Layout and Navigation

Moving the mouse to the left hand side of the screen will make the tool bar appear so that the User can select the necessary image manipulation tool.

Moving the mouse to the bottom of the screen will make the thumbnails associated with the study appear. To load a different image into the image manipulation window, drag the thumbnail into the image manipulation window and it will automatically load.

Frequently Used Tools

The Clarity Viewer keeps track of how often tools are used, and the most frequently used tools populate the bottom area of the tool bar, giving the User quick and easy access to their most used tools. The User may set the number of frequently used tools by going to **Configuration** > **Tools** tab. In the Tools tab, the User may also reset the frequently used tools count, which will clear all the tools from the frequently used tools section of the tool bar. The User may also remove one tool at a time from the frequently used tools section by Ctrl + Alt + mouse clicking on the tool in the tool bar.

Locking the Tool bar

The User has the option to make the tool bar always visible. Clicking the **Lock** button at the bottom of the tool bar will cause the tool bar to be always visible. Deselecting the button will return the tool bar to its hidden state.

Default Mouse Actions

When the Viewer window is first opened, the mouse buttons are automatically mapped to image manipulation tools. The mapped mouse button is indicated by a mouse icon on the upper, right-hand corner of the tool's icon (illustrated in the graphic below). The default mapped mouse buttons can be changed. See Section *Select Default Tools Per Modality* on page 31 for more information.

Holding down the right mouse button and moving it vertically on the screen will adjust the brightness of the image. Holding down the right mouse button and moving it horizontally on the screen will adjust the contrast of the image.

Holding down the left mouse button and moving the mouse in any direction will allow the User to pan around the image.

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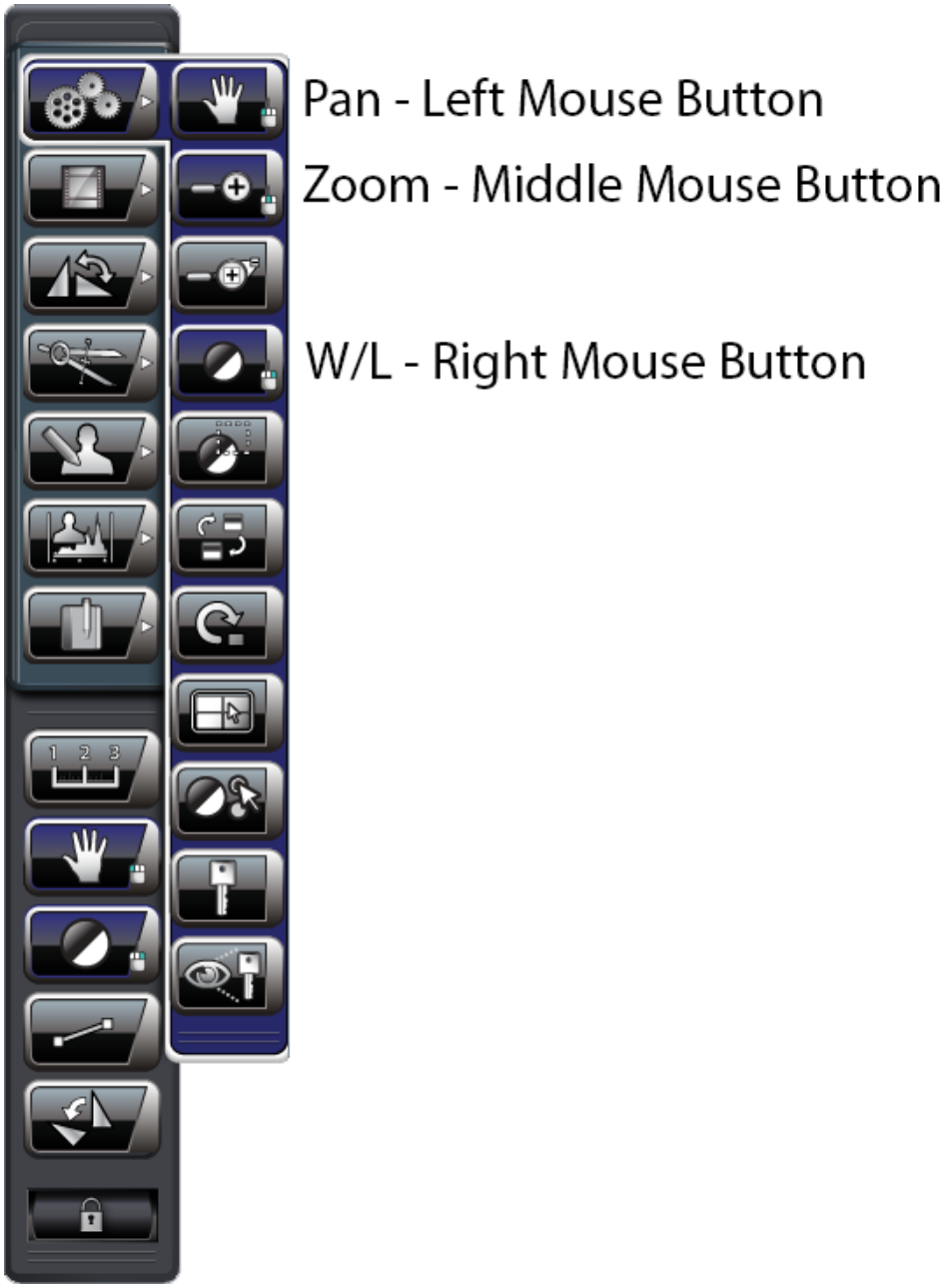

If the User has a scroll wheel mouse, moving the scroll wheel up will zoom into the image, while moving the scroll wheel down will zoom out.

Each mouse button is re-mappable to any tool that has an interactive function. To re-map a mouse button, move the mouse over the left side of the screen to make the tool bar pop-up. Locate the tool the User wishes to map to the mouse button, move the mouse over that tool, then click the tool with the mouse button the User wishes to map. For example, if the User wishes to map the Mag tool to the right mouse button, move the mouse over the Mag tool button, then right mouse click on the Mag tool button. You will see a small mouse icon appear in the upper right-hand corner of the Mag tool button, this means the User has successfully re-mapped the mouse button. To use the newly mapped Mag button, move the mouse over the image at the point the User wishes to magnify, then right click.

Default Image Layouts

The User may specify, on a per modality basis, the default layout of images in a study. Please see Section *Default Image Layouts* on page 45 to set this option. If enabled, this preference will override those specified below.

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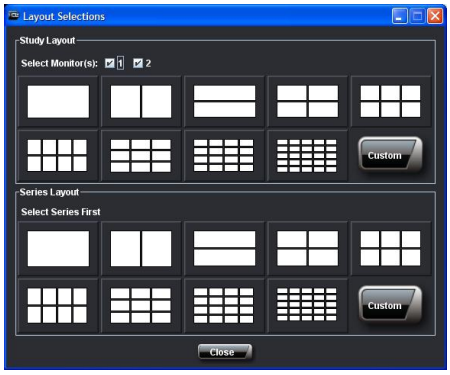
Study Layout



The Study Layout is used to view multiple images on one screen. To use the Study Layouts, first select which monitor to apply the layout selections to (the monitor is select when there is a dashed, white border just inside the image viewing pane). Then select the layout view to use, and the image manipulation window will split into the desired number of panes. Then drag the images from the thumbnail box into the viewing panes. To return to viewing one image, select the monitor to apply the layout to, then click the single box in the upper left hand corner of the **Layout Selections** dialog box.

Series Layout

The Series Layout is used to view multiple images in a series, such as images from the CT or MR modality. To use the Series Layouts, first select the monitor to apply the layout to, then select the layout view to use, and the image manipulation window will split into the desired number of panes. The images in the series will then populate the pane. To return to viewing one image, click the single box in the upper, left-hand corner of the layout selections dialog box. Images of the CT modality will automatically open four viewing panes, and the MR modality will open nine viewing panes. The User may change the number of panes for the CT and MR modality by clicking a different layout view from the Image Layouts dialog.

Next & Previous Image

These buttons move to the next and previous images in the patient study when inside an image manipulating window. The buttons can be revealed by hovering the mouse over the upper, right-hand corner or the image manipulation window. The left and right arrow keys will also advance the User through the images in a series. Hotkey: Right Arrow: Next Image, Left Arrow: Previous Image.

Next & Previous Series

These buttons move the User to the next and previous series in a study. The buttons can be revealed by hovering the mouse over the upper, right-hand corner or the image manipulation window. The up and down arrow keys will also advance the User through the series in a study.

Note:

You can move to the Next Series by pressing the Up Arrow and move to the Previous Series by pressing the Down Arrow.

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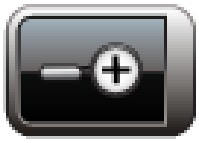
Image Manipulation Functions

Pan

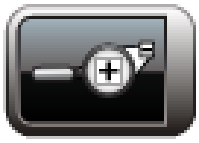
The Pan tool allows the User to move the image around the screen. This is especially useful if the User is zoomed into an image and needs to view another section of the image. By default, the Pan tool is mapped to the left mouse button. To use the Pan tool, first select it from the tool bar. Then move the mouse over the image. Click and hold down the mouse button, then move the mouse in the desired direction to pan. Hotkey: P

Zoom



The Zoom tool is used to increase or decrease the magnification of the image. By default, it is mapped to the middle mouse button. To use the Zoom tool, first select it from the tool bar, then mouse over the image. Click, hold, and move the mouse vertically to change the zoom level. Hotkey: Z

Mag



The Mag tool allows the User to temporarily magnify part of the image. To magnify a part of the image, first select the Mag tool from the tool bar. Mouse over the image, then click and hold the mouse button. A box will appear with the magnified section of the image. While holding down the mouse button, the User can use the up and down arrow keys to increase or decrease the magnification inside the box, and the left and right arrow keys to increase the size of the magnification box. Hotkey: G

Window/Level

The Window/Level tool allows the User to adjust the brightness and contrast of the image. By default, this is mapped to the right mouse button. To use the W/L tool, first select it from the tool bar. Then hold down the mouse button and move the mouse horizontally to adjust the contrast of the image and move the mouse vertically to adjust the brightness of the image. Hotkey: W

Smart Window/Level

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The Smart Window/Level tool allows the User to do an automatic Window/Level optimization determined by a user-selectable box. To use the Smart W/L, select the tool from the tool bar, then click, hold, and drag to draw the box. Release the mouse button when the box is a sufficient size. The box will optimize the W/L setting for the selected area.

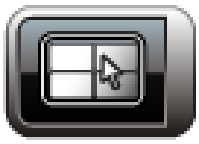
Invert

The Invert tool will invert the colors of the image. To use the Invert tool, first locate it in the tool bar. Then single mouse click to invert the image.

Reset

The Reset button will return the image to the state it was in when it was opened. It will remove any Window/Level, Zoom, Invert, and Rotation manipulations done to the image. It will not, however, remove annotations on the image. To use the Reset tool, locate it in the tool bar, then click it once to reset the image.

Image Layouts

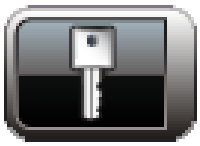


The image layout tool allows the User to compare two or more images side by side. Clicking on the Image Layout button will pop-up the **Layout Selections** dialog box.

Predetermine Window/Level

The Predetermined Window/Level tool applies a specified Window/Level values to the image that had been previously been set by the user.

Mark Key Image



The Mark Key Image tool classifies the current viewed image as important. All marked images are attached to reports.

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Key Image Montage

The Key Image Montage tool changes the display to only show the marked images.

Cine Tools

Scroll

The Scroll tool allows the User to scroll through a series of images. To use the scroll tool, first select it from the tool bar. Then mouse over the image and move the mouse vertically. Hotkey: S

X-Ref

The X-Ref tool allows the User to show cross-reference lines on two overlapping, anatomic views from the same study. To use the X-Ref tool, first select it in the tool bar. Then click on the image that the User wants cross-referenced, and the cross-reference lines will appear. Hotkey: X

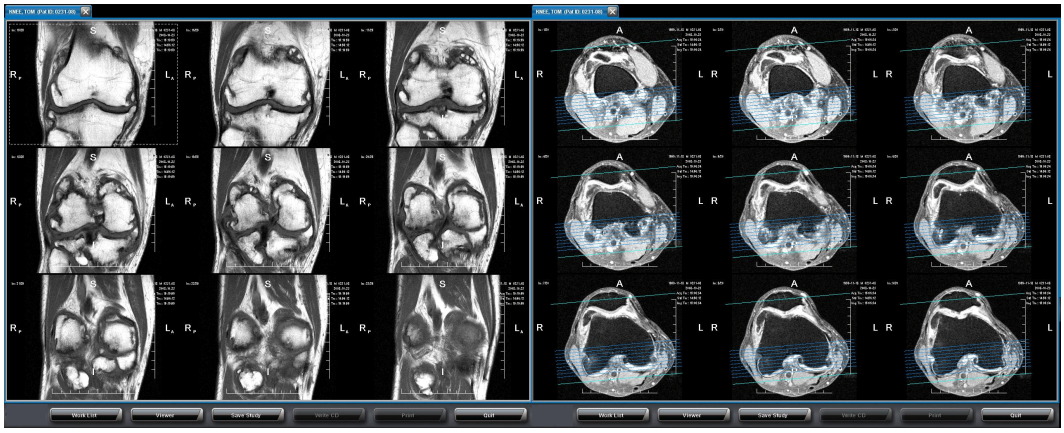
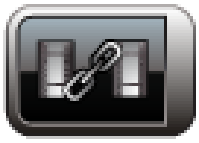


Figure 2: Cross-references lines in the Clarity Viewer

Linking



The Linking tool allows the User to apply the cine operation to two different series that were acquired using the same view. To use the Linking tool, first select it from the tool bar. Then click on the on one frame of the study that is to be linked. Use the cine play-back tools to play both series at the same time. Hotkey: L

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Loop Forward

The Loop Forward tool will play back, in a cinematic style, a series with multiple images from the first image to the last image and continue to play them until it is halted.

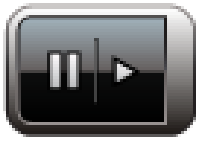
Loop Backward

The Loop Backward tool will play back, in a cinematic style, a series with multiple images from the last image to the first image and continue to play them until it is halted.

Cine Forward & Back

The Cine Forward & Back tool will play back, in a cinematic style, a series with multiple images from the first through the last image, then from the last image to the first and continue to play them until it is halted.

Pause/Play



The Pause/Play tool will pause the play back from the Loop Forward, Backward, and Forward & Back tools.

Frames Per Second Selection

The Frames Per Second (FPS) slider allows the User to adjust the play back rate for the Loop Forward, Loop Backward, and Forward & Back tools.

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Rotate Tools

Flip

The Flip tool will vertically invert the image. To use the Flip tool, locate it in the tool bar, then left mouse click once to flip the image.

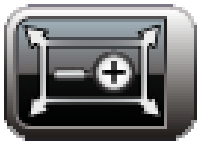
Mirror

The Mirror tool will horizontally invert the image. To use the Mirror tool, first locate it in the tool bar, then left mouse click once to mirror the image.

Rotate Left & Right

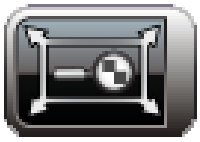
The Rotate Left and Right tools will rotate the image in 45 degree increments to the left or right depending on which button the User chooses.

Zoom to Full



The Zoom to Full tool magnifies the image to a level in which the entire image can be seen.

Zoom to Pixels



The Zoom to Pixels tool magnifies the image to a level in which one pixel in the image is equivalent to one pixel on the screen.

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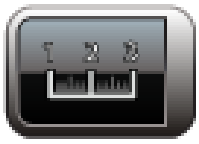
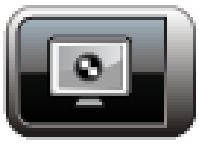
Measurements

Measurement



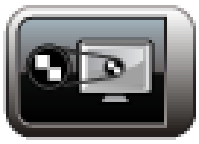
The Measurement tool allows the User to make a linear measurement directly on the image. To use the Measurement tool, first select the tool from the tool bar, then mouse click and hold at the point where the measurement starts, then while holding the mouse button, drag the mouse to the end point of the measurement and release the mouse button. While dragging, the User will see the measurement. You can move the measurement around the image by selecting it (the User will know the measurement is selected when four dots show up around the measurement), then dragging it around the screen. To remove the measurement, select it and hit the Backspace key. Hotkey: M

HU



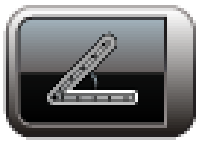
The HU tool, or Hounsfield Unit, will convert the gray scale value on the image to a pixel value/Hounsfield Unit. To use the HU tool, first select the tool from the tool bar, then move the mouse to the desired area and click. A cross will appear, displaying the Hounsfield Unit at that point. Hotkey: H

HU ROI



The HU ROI tool, or Hounsfield Unit Region of Interest, will take a selected region, average the gray scale unites for the region, then convert the average gray scale unit into a Hounsfield Unit. The tool will display the Hounsfield Unit measurement, the standard deviation of the pixel value, and the area of the circle in cm^2. To use the HU ROI tool, first select it from the tool bar. Then click, hold, and drag out the box. Release the mouse button when the HU ROI box is the desired size. Hotkey: R

Angle



The Angle tool allows the User to measure angles on an object in the image. The Angle tool is able to display the interior or exterior measurement of the angle.

To use the Angle tool, first select it from the tool bar, then move your mouse to where the vertex of the angle will be, mouse click, hold, and drag out one leg of the angle. When the length of the leg is satisfactory, release the mouse button. The second leg of the angle is drawn by moving the mouse to the desired end point of the second leg and mouse clicking. This will set the angle.

If the User wishes to display the interior angle measurement, move the mouse to the acute side of the angle and mouse click, or if the exterior measurement is necessary, move the mouse to the obtuse side of the angle and mouse click.

45° Angle Snap Feature

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The 45° Angle Snap feature allows the user to precisely measure angle from the horizontal or vertical line by incrementing the angle every 45° between the first leg of the angle to the second leg of the angle.

To activate the angle snap feature, depress the Ctrl key as the second leg of the angle is drawn by moving the mouse to the desired end point of the second leg.

Complementary Angle

If the user wishes to display the complementary angle measurement, click on the vertex that displays the angle and move it around to display the interior angle, the exterior angle, and the complementary angles.

Cobb Angle

The Cobb Angle tool allows the User to draw a Cobb Angle on the image. To use the Cobb Angle tool, first select it from the tool bar, then mouse-click, hold, and drag to draw the first line. Release the mouse button when the first line is sufficiently long. Then mouse click, hold, and drag to draw the second line. Release the mouse button when the second line is sufficient in length. To set the interior or exterior measurement, mouse over the acute or obtuse side of the Cobb Angle, and mouse click again. The measurement will appear.

Center Line

The Center Line tool allows the User to annotate, in four different methods, a center line or point on the image. The User may select the Center Line annotation type by navigating to the **Work List** > **Configuration** > **Tools** tab. To use the Center Line tool, first select it from the tool bar, then:

Two Points no Line (click and drag)

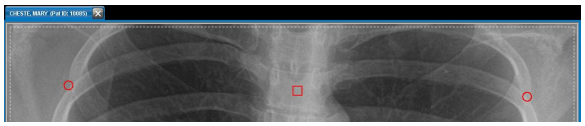

Figure 3: Center Line Tool: Two Points Without a Line

To use the Center Line tool with two points and no line, mouse click at the desired start point, hold, and drag the Center Line annotation to the desired length. When the Center Line is correctly positioned, release the mouse button. The square indicates the center point between the two circles.

Two Points with Line (click and drag)

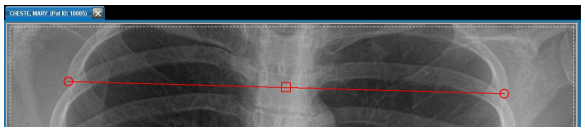

Figure 4: Center Line Tool: Two Points With a Line

To use the Center Line tool with a line, mouse click at the desired start point, hold, and drag the Center Line annotation to the desired length. When the Center Line is correctly positioned, release the mouse button. The square indicates the center point between the two circles with a straight line passing through all points.

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Four Points

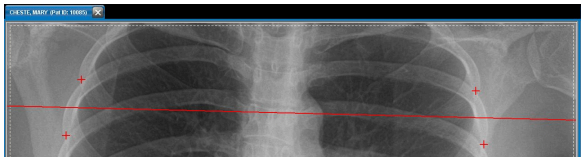


Figure 5: Center Line Tool: Four Points With a Line

To use the Center Line tool with four points, mouse click at each of the desired points. The four point version of the Center Line finds the center point between the first set of two clicked points, and the center point between the second set of two points, then draws a line through the two center points.

Eight Points with Angle

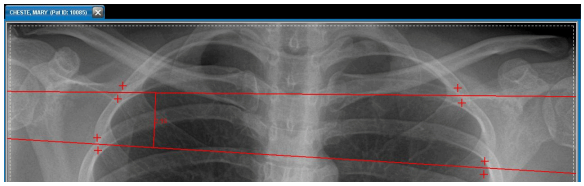
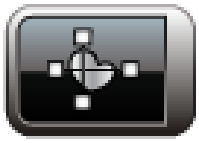


Figure 6: Center Line Tool: Eight Points With an Angle

To use the Center Line tool with eight points and an angle, mouse click at the first four desired points. The Center Line finds the center point between the first set of two points, and the center point between the second set of two points, then draws a line through the two center points. Repeat the process for the second set of four points and the angle of the two intersecting lines will be shown.

Heart to Lung Ratio



The Heart to Lung Ratio tool allows the User to find the ratio of the heart to lung size. To use the Heart to Lung Ratio tool, first select the it from the tool bar, then use the mouse to click, hold, and drag the first measurement, then release the mouse. Use the mouse again to mouse click, hold and drag for the second measurement. Release the mouse button when the length is satisfactory. The ratio of the two measurements will be displayed automatically.

Annotations

Toggle Annotations

The Toggle Annotations tool allows the User to hide and show annotations & measurements. To hide annotations, locate it in the tool bar, then click the **Toggle Annotations** button. Note that new annotations cannot be drawn while the annotations are hidden. To show the annotations, click the **Toggle Annotations** button again.

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Text Arrow

The Text Arrow tool allows the User to draw an arrow point at a region of interest and add text to the tail end of the arrow. To use the Text Arrow tool, first select the tool, then mouse click and hold where the end of the arrow will be. While still holding the down the mouse button, drag the mouse to where the arrow head will be, then release the mouse button. After releasing the mouse button, a dialog box will pop up asking for the text. Enter the desired text, click **OK**, and the text will appear at the tail end of the arrow. Hotkey: U

Note:

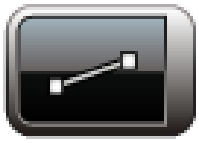
For an arrow without text, do not enter any text into the text field dialog box.

Press **OK** or **Cancel** with the text field empty, and no text will be drawn on the arrow.

Note:

The User may switch the arrow drawing direction in the preferences.

Line



The Line tool allows the user to draw lines on the image. To use the Line tool, first select the tool, then mouse click and hold where the user wants the line to begin, then, while still holding the mouse button, drag out the line. Release the mouse button when the user want to end the line.

Circle

The Circle tool allows the User to draw circles or ellipses on the image. To use the Circle tool, first select the tool, then mouse click and hold where the User want the circle to begin, and while still holding the mouse button, drag the circle out to encompass the region of interest. When finished, release the mouse button to finalize the circle.

Text

The Text tool allows the User to add text notes to the image. To use the Text tool, first select the tool, then mouse click where the text should appear. A dialog box will appear. Enter the desired text and click **OK**. The desired text will appear where the mouse was clicked. Hotkey: T

Overlay

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The Overlay tool toggles the amount of information displayed on screen. With this tool the User can display different levels of information about the image. To use the Overlay tool, locate the it in the tool bar, then click the **Overlay** button. There are three different levels of information that can be displayed, so the User can click the Overlay button several times to display different amounts of information.

Filters

Sharpen

The Sharpen tool allows the User to apply a standard image sharpening filter to the image. To use the Sharpen tool, locate it in the tool bar and click it. Depending on the size of the image, it may take a few seconds before results are seen.

Histogram Equalization

The Histogram Equalization tool allows the User to apply a histogram equalization filter to the image. The Histogram equalization tool takes an image that has most of the usable data represented within a close contrast range and "spreads out" this data over the available grayscale values to improve contrast visibility. To use the Histogram Equalization tool, locate the **Histogram Equalization** button in the tool bar and click it. Depending on the size and bit-depth of the image, it may take a few seconds before results are seen. The User may need to re-window/level after applying a histogram equalization.

Undo

The Undo tool reverses the action of the previous Sharpen or Histogram Equalization filter.

Redo

The Redo tool reapplies the last filter that was reverted using the Undo tool.

Reporting Tools

Note:

No annotations or manipulations (W/L, Pan, Zoom, Arrows, etc.) will be included on images in reports. The Reporting Tools are a suite of functions designed to allow the Users to share, view, print and send reports from the Clarity Viewer.

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Attach PDF

The Attach PDF tool allows the user to locate a PDF file on the computer and attach it to the study.

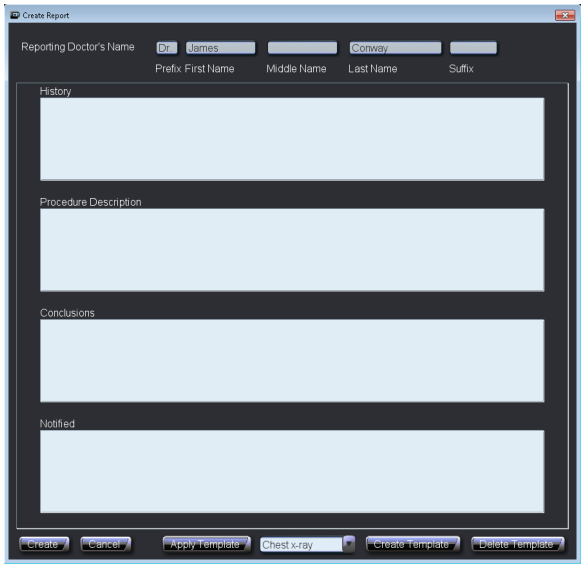
Write Report

The Write Report tool opens the Report Writer window. Enter the necessary information by typing in the text field. To create a new line, hit the **Enter** key on the keyboard.

Click **Create** to generate the report. It will be saved alongside the image for viewing.

Note:

Only Users with "doctor" privileges are able to write reports. If your permissions are not set correctly, please contact your System Administrator.



Clarity Archive only permits one report per a study. To modify a report:

1. Open the patient study.
2. Click the **Write Report** button. The **Create Report Addendum** dialog will pop-up.
3. Select the radio dialog box for either Addendum or Correction, then type the addendum or correction into the text box.
4. Click the **Create** button and the addendum/correction will be appended to the bottom of the report.

Export Report

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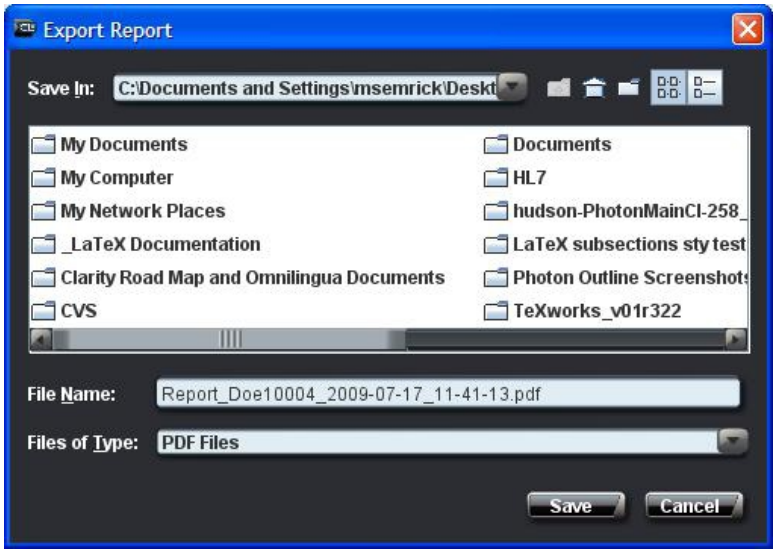
To export a report to the local hard drive for printing, archiving, or other purposes, click the **Export Report** button in the tool bar. A dialog will pop-up asking for the save location. Select a location, then click **Save**. The report will be saved to the location the User chooses. The report can then be opened using any PDF viewer.



Save Image

The Save Image tool allows the user to save an image to the local hard drive in the JPEG, GIF, or PNG format.

To export an image to the local hard drive, select the image that wants to be exported and then click the Save Image button in the tool bar. A dialog will pop-up asking for the name of the image and the save location. Select a location, then click Save. The image will be saved to the location the User chooses and it can be opened using any image viewer. By default the file format for the export image is JPEG. The user can export the image as a GIF or PNG format by adding .gif or .png at the end of the image name.

Note:

It is possible to save multiple images on the screen at the same time.

Viewing a Report

Viewing a report is the same as viewing an image. Locate the report in the **Thumbnails** pop-up, then drag the report onto the screen and it will load automatically.

Report Templating

The Report Writer tool includes a templating feature for writing a report.

To apply a template to a report:

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1. In the tool bar, click the **Write Report** button.
2. In the drop-down menu next to the Apply Template button, select the desired template.
3. Click the **Apply Template** button.
4. The template will populate the Report text boxes.

Creating a New Report Template

1. In the tool bar, click the **Write Report** button.
2. Fill in the desired fields for the template. The User does not have to fill out all fields. For example, the User could fill in only the **Fax** and **Notified** fields.
3. In the drop-down menu next to the Apply Template button, select **Create New**.
4. Click the **Apply Template** button.
5. Assign a name to the new template, then click **Ok** to save the new template.

Deleting a Report Template

1. In the tool bar, click the **Write Report** button.
2. In the drop-down menu, select the Template to be deleted.
3. Click the **Delete Template** button.
4. The **Delete** dialog will pop-up.
5. Click **OK** to delete the template.

Advanced Tools

The Advanced Toolset allows the user to utlize various tools. These tools are more specific in function than the general tools, and thus may be of interest to certain users.

To access the Advance Toolset, the user must be in the Study View. Move the mouse to the top left corner of an image. As the mouse hovers over this area, a drop down menu displaying the Advanced toolset will appear. From the menu, select the tool you wish to use.

Pelvic Toolset

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The Pelvic Toolset feature contains a number of useful tools related directly to pelvic examinations. The Toolset includes parallel matching lines, perpendicular matching lines, horizontal offset line, cut line, line, point, spine labeling, and measure distance tools.

Parallel Matching Line

The Parallel Matching Line tool allows the user to select an existing line. Once a line is selected, a user can then create new lines that will be parallel to the selected line.

Perpendicular Matching Line

The Perpendicular Matching Line tool allows the user to select an existing line. Once a line is selected, a user can then create new lines that will be perpendicular to the selected line.

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Horizontal Offset Line

The Horizontal Offset Line tool allows the user to draw a line. Clarity will draw a Horizontal Line at the same height as the first point in the user's line. It will then display the measured distance (MD) in millimeters from the second point in the user's line to the Horizontal line.

Cut Line

Select a line. The Cut Line tool allows the user to create a line that is collinear with the selected line.

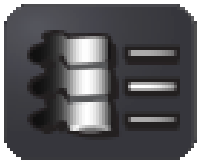
Line

The Line tool allows the user to draw a line on the image.

Point

The Point tool allows the user to create a point on the image.

Spine Labeling



The Spine Labeling tool allows the user to label the vertebrae from any starting point going in either direction.

Measure Distance

Click on a line, point, or annotation. The Measure Distance tool allows the user to determine the distance from that marking to another location on the image.

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Curve

The Curve tool allows the user to compare a patient's cervical curve to a healthy reference curve on a lateral cervical image.

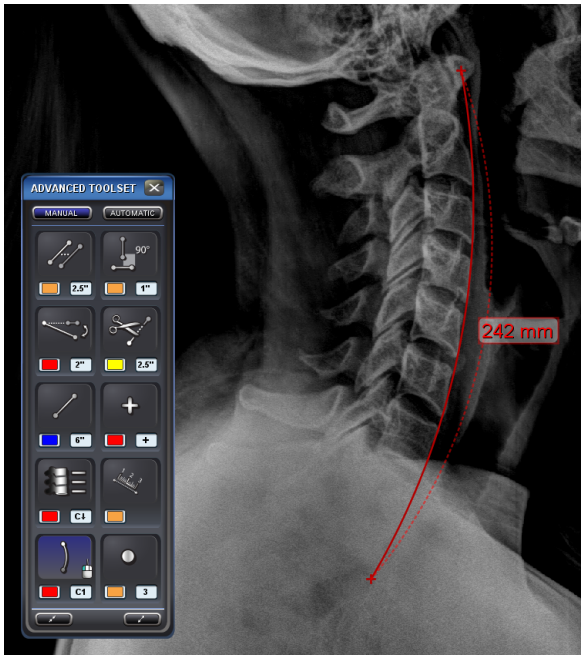
To set up the reference curves, go to *Curve Tool* on page 29.

Note:

The curve radii should be set to researched values trusted by the physician.

Note:

A physician may select different reference points than those indicated below as long as the points are consistent with the chosen reference curve radius.



C1 - T2 Cervical Curve

To use the cervical tool:

1. Select the athlantodental interval (ADI) on the C1. This will place a point on the selected area.
2. Place the second point at the bottom of the T2 vertebral body.
3. Place the third point on the edge of the mid vertebral body between C1 and T2 (this will create a curve parallel to the spine).

The completed curve will appear as a solid line and display the radius in mm and degrees. The reference curve will appear as a dashed line.

C2 - C7 Cervical Curve

The C2 - C7 curve should be used when the T1 vertebrae is not visible on the image.

To use the cervical tool for the C2 - C7 curve:

1. Selec the bottom of the C2. This will place a point on the selected area.
2. Place the second point at the bottom of the C7 vetebral body.

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3. Place the third point on the edge of the mid vertebral body between C2 and C7 (this will create a curve parallel to the spine).

The completed curve will appear as a solid line and display the radius in mm and degrees. The reference curve will appear as a dashed line.

Lumbar Curve

The lumbar curve should be used on a lateral lumbar image.

To use the cervical tool for the lumbar curve:

1. Select the bottom of the T12 cervical body. This will place a point on the selected area.
2. Place the second point at the top of the sacrum S1 cervical body.
3. Place the third point on the edge of the mid-vertebral body between T12 and C7 (this will create a curve parallel to the spine).

The completed curve will appear as a solid line and display the radius in mm and degrees. The reference curve will appear as a dashed line.

Dot

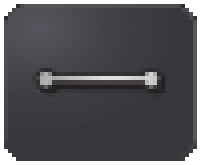
Place a dot on a region of interest by clicking on the desired spot. It is possible to modify the diameter and color of a dot by changing those settings in the toolset.

Note:

The dot will grow or shrink when zooming into or out of the image, respectively.

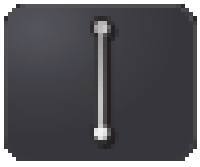
Other Tools

Horizontal Line



The Horizontal Line tool allows the user to create a horizontal line on the image.

Vertical Line



The Vertical Line tool allows the user to create a vertical line on the image.

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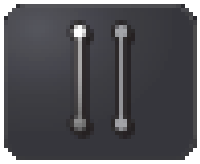
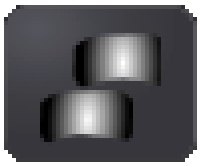
Parallel Lines



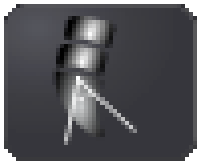
The Parallel Lines tool allows the user to draw a line. The user is then tasked to place a second line, parallel to the first. The tool will then display the distance between the two lines.

Disk Slippage



The Disk Slippage tool allows the user to determine the percentage and distance measurements of one disk in relation to another.

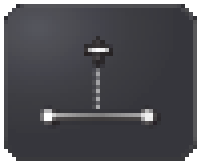
Pelvic Incidence Tool



The pelvic incidence tool assists the user to measure the three main pelvic parameters which are pelvic incidence, sacral slope and pelvic tilt.

To use the pelvic incidence tool, first select it from the Advance Toolset menu, then draw a line across the sacral plate by mouse clicking at the start point of the sacral plate, drag the sacral line and mouse clicking at the end point of the sacral plate. Next, drag down the cursor to the center of the femoral head and mouse click to the draw a line connecting the midpoint of the sacral plate and the center femoral head. Upon completion of this process, the angles for the sacral slope, the pelvic incidence and the pelvic tilt will be shown at their respective positions.

Distance from Horizontal tool



The distance from horizontal tool allows the user to measure the horizontal distance of a point perpendicular from its respective vertical line.

To use the sagittal vertical axis tool, first select it from the Advance Toolset menu, then mouse-click to automatically draw a vertical line on the image. Next, mouse-click at a desired point perpendicular to the vertical line and the horizontal length between the point and the vertical line will be displayed on the image.

By clicking and dragging on the horizontal point, the User can adjust the measurement of the distance from the horizontal line.

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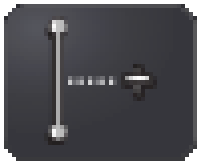
Distance from Vertical Tool



The distance from vertical tool allows the user to measure the vertical distance of a point perpendicular from its respective horizontal line.

To use the distance from vertical tool, first select it from the Advance Toolset menu, then mouse-click to automatically draw a horizontal line on the image. Next, mouse-click at a desired point perpendicular to the horizontal line and the vertical length between the point and the horizontal line will be displayed on the image.

By clicking and dragging on the vertical point, the User can adjust the measurement of the distance from the vertical line.

Triangulation

The Triangulation tool pinpoints a specific region of interest within all views in all series.

To use the tool, click on the region of interest. Clarity will create a point that will appear on each series corresponding to the location of the region of interest.

Angle from Lines Tool

The angle from lines tool allows the user to measure the angle between two lines. To use the angle from lines tool, first select it from the Advanced Toolset menu, then click or drag two lines intersecting each other and an angle will appear at the intersection. The angle can be dragged around the intersection to display the angle of any quadrant. If the lines do not intersect, they will be extended so that they will.

Labels

Predefined labels can quickly be placed on an image with the Labels tool. To use the Labels tool, select the label icon from the Advanced Toolset menu. Left click on the image; a drop-down menu with the predefined labels will appear. Selecting one of the labels will place the label on the image.

Note:

To set up Predefined Labels, go to *Predefined Labels* on page 30.

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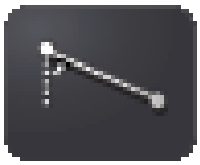
Angle from Horizontal

Given two points, the Angle from Horizontal tool allows the user to determine the angle between the line formed by those two points and the horizonal axis.

To use the tool, select two points on the image. This will create a line between the points and display the angle measurement.

By selecting the angle text and moving it around the image, it is possible to display complementary angles.

Angle from Vertical



Given two points, the Angle from Vertical tool allows the user to determine the angle between the line formed by those two points and the vertical axis.

To use the tool, select two points on the image. This will create a line between the points and display the angle measurement.

By selecting the angle text and moving it around the image, it is possible to display complementary angles.

Circle from Points

The Circle from Points tool lets you create a circle from a series of points.

To use the tool, select at least three points on the image. When finished selecting points, click one of the existing points. Clarity will create a best-fit circle based on the position of the points, displaying the diameter in inches. It is possible to click and drag the points and distance annotation.

Note:

If only one or two points are placed, the tool will be cancelled due to a lack of information.

George's Line

George's Line is a line drawn down the posterior margins of vertebral bodies on the lateral view of the cervical spine. With it, Clarity can generate measurements of vertebral body displacement (mm).

Select the upper point of the cervical vertebra and then the lower point to create a line segment along the posterior. Follow the same steps for the vertebra below it and continue to do so for each vertebra until the desired number of

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line segments have been created. To stop creating segments, click a location on the image that is at least 12 mm away from the previously placed point. The segments will transform from dotted lines into solid lines.

Note:

If at any point during the segment selection process you switch to another tool or attempt to Window/Level the image, all current segments will be removed. Please be sure to finish segment creation before continuing image manipulation.

Note:

Upon completion of George's Line, Clarity will switch to the Hand tool.

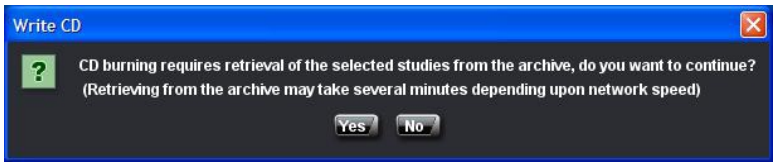
When the George's Line annotation is selected, Clarity will display the lateral offsets for each superior vertebra. The offset distance will be displayed to the side of the offset.

Red segments will connect the verebra segments together, displaying the lateral offset.

Burning a CD/DVD

1. In the Work List, select the desired patient(s). The User may simultaneously hold down the Ctrl key and left mouse click to select multiple patients.
2. Click the **Export** button.

3. Click **Yes** to retrieve the studies.


Write CD
CD burning requires retrieval of the selected studies from the archive, do you want to continue?
(Retrieving from the archive may take several minutes depending upon network speed)
Yes
No

4. Please be patient, depending on the speed of the network and the number of patients selected, retrieving the studies could take a few minutes.
5. The export dialog will pop up once the studies have been retrieved. To burn the studies to a CD/DVD, select the burner attached to the system in the export dialog, then click the **Export** button. If the User wants an embedded image viewer on the CD, check the appropriate box at the top of the export dialog. If the User wants to export the studies to the local file system, then select the desired folder for export. It is possible to export multiple studies at the same time.

Note:

Clarity will burn a light viewer onto the CD so that users can view the images.

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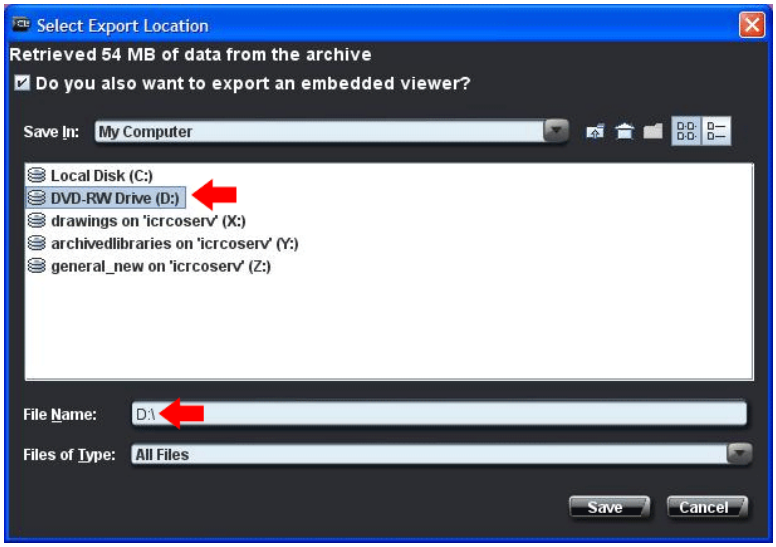

6. Please be patient as the files export. The **Quit** button will be grayed out while the CD/DVD burns, as the User may not exit the Viewer until the burning has finished. Once the disk is done burning, it will automatically eject from the drive.

Saving and Sending a Study

Saving a Study from the Image Viewer window

Note:

Only one GSPS per study is allowed. GSPS information is always overwritten when saving new annotations.

While in the Image Viewer window, the **Save Study** button is used to save the current study. Clicking the **Save Study** button when in the Viewer window will save the following attributes: current Window/Level settings, Annotations, Image Rotation, and Image Flip. Saved states are automatically loaded when the series is opened.

DICOM Sending a Study from the Work List window

While in the Work List window, the **Send Study** button is used to DICOM Send to another system's target.

Setting Up a DICOM Target:

1. While in the **Work List** window, highlight the desired patient(s) to send.
2. Click the **Send Study** button. The **DICOM Send** dialog will pop-up.
3. Select the **Configuration** tab.
4. Enter the new AET Title, IP Address, and Port Number of the DICOM Target.
5. Click the **Save** button. The Clarity Viewer will automatically test the new parameters to make sure there is a valid DICOM connection.
6. If the connection is valid, the **Save AET** dialog will appear. Give the new DICOM target a meaningful name, then click **OK** to save the new target.

DICOM Send:

1. While in the **Work List** window, highlight the desired patient(s) to send.
2. Click the **Send Study** button. The **DICOM Send** dialog will pop-up.

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3. Select the desired profile to send to from the **Profile Name** drop-down menu.
4. Click **Send** to DICOM Send the selected study.

Clarity Viewer Hotkeys

Keyboard Shortcut	Software Function
Escape	Remove all image manipulations (W/L, Zoom, Pan)
F1	Show Online Help Documentation
F2	Brings up CR Overlay Details Dialog
F3	Pauses/Un-pauses Series Loading State
F4	Query/Retrieve Selected Study
F5	View Selected Study
F10	Show Thumbnail Bar
F11	Opens the Pelvic Toolset
Right Arrow	Next Image in a Series
Left Arrow	Previous Image in a Series
Up Arrow	Next Series in Study
Down Arrow	Previous Series in Study
W	Window / Level Tool
Z	Zoom
P	Pan
G	Magnify
D	Drag and Drop
S	Cine Tools Scroll
X	Cine Tools X-Ref
L	Cine Tools Linking
M	Measure
H	Hounsfield Unit
R	Hounsfield Unit Region of Interest
K	Mark Key Image
T	Text Annotation
U	Text Arrow Annotation
C	Clear All Annotations
Backspace/Delete	Delete Selected Annotation
Ctrl + A	Select All Annotations
Ctrl + C	Copy Selected Information to Clipboard

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Keyboard Shortcut	Software Function
Ctrl + D	Show All DICOM Tags
Ctrl + Alt + Mouse Click	Remove tool from Frequently Used Tools List

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Chapter 4

DICOM Printing

Advanced DICOM Printer

Selecting Studies for Printing

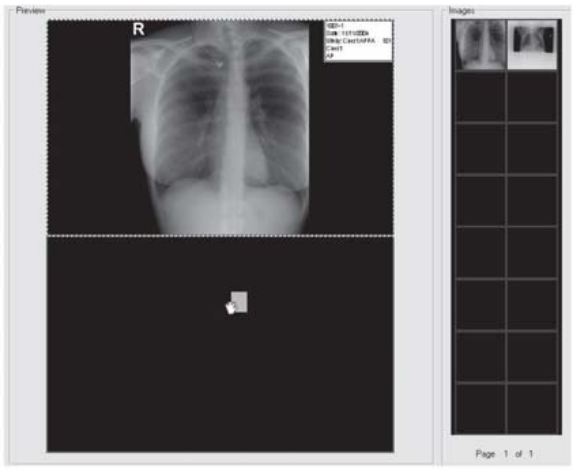
1. In order to launch Print Tool. Select a patient from the worklist.
2. On the **Studies** screen, click the **Print** button. The Print tool will be launched.
3. The program may ask you to allow QPCPrintTool.exe to run. Click **Yes**.

Note:

If the Print Tool is already running, you may receive a warning. You can either add the studies to the program or restart the program.

Drag and Drop Images

To drag images into the print region hold the left mouse button down on one of the image icons on the right hand side and drag it into the preview window. A dragging cursor will appear as the user drags the image from the image icon window to the preview window. If the user is out of the accepted region for dropping, a cursor will appear letting the user know that this is not a correct region to drop the image into.



Split the Preview Window into Regions

To split the preview window the user needs to first select the region to split. For example, if there are currently no divisions in the preview window then click anywhere in the preview window and a green line will appear around the window. This will enable the image division buttons. Alternatively, the user can press **Shift** + right mouse click inside the preview window region to split it. A pop-up menu will appear with these division buttons (as the image to the right shows).

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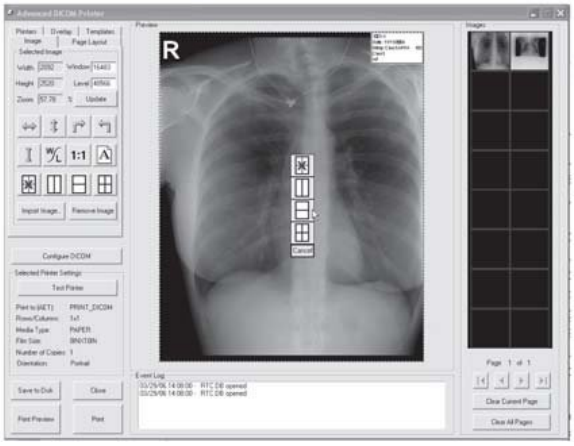
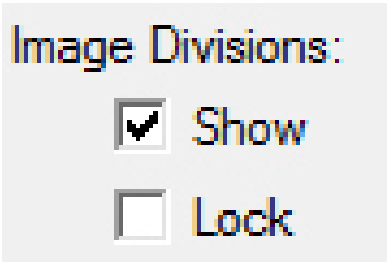
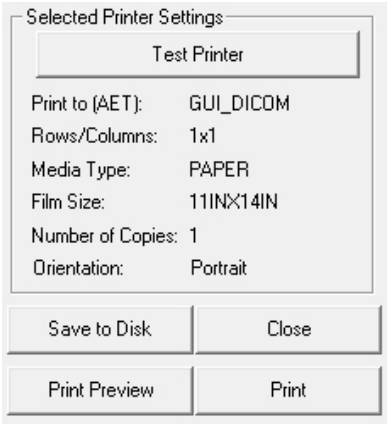


Select one of the image division buttons and the preview window will be divided into regions. To split one of these regions again select the specified region and again select one of the image division buttons. The user can drag and drop images at any stage. If the user has an image in the region that is desired, the interface will automatically move the image into the split regions. To remove a division, click in the region that has been split and click on the no-division ▣ button.



The user can show and hide the image divisions by clicking on the **Page Layout** tab, then click **Show and Lock** under **Image Divisions**. The user can view the current print settings by looking at the left hand side of the **Advanced DICOM Printer** dialog. To change these settings, or to view more settings, click on the **Printers** tab.



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Manipulating Image in the Preview Window

The Advanced DICOM Printer allows the user to flip, rotate, zoom, pan, invert and window/level images. To manipulate the images select the image in the preview window (the selection will be shown by the green box surrounding the image).

The user can flip, rotate and invert by using the buttons on the left hand side of the DICOM Printer dialog.

The user can zoom by using the right mouse button on the selected image.

To pan the image use the left mouse button on the selected image.

Note:

The User can only pan the image when it is zoomed in.

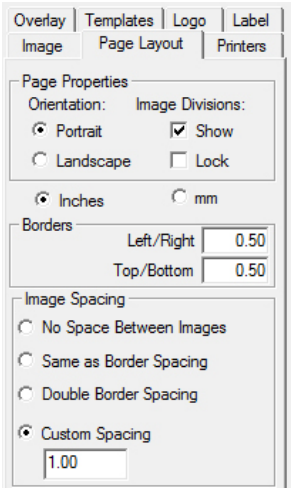
To window/level the user can either use the middle scroll button on the mouse or type the required window/level into the edit boxes on the left hand side of the **Advanced DICOM Printer** dialog. Then press the **Update** button to change the window/level for the image.

The user can also press the **1:1** button to print images at 1:1 resolution.

The user can use the **Orientation** button to change from landscape to portrait view.

Changing Margins

The margin tab permits the user to specify, in English or metric units, the size of the borders on the printed image. The top and bottom borders on the page can be adjusted independently of the borders for the left and the right hand side of the page.



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Additionally, the user has the option to control the internal margins, which define the amount of space left between individual frames on a page with multiple images. Internal margins are defined as multiples of the print page border size.

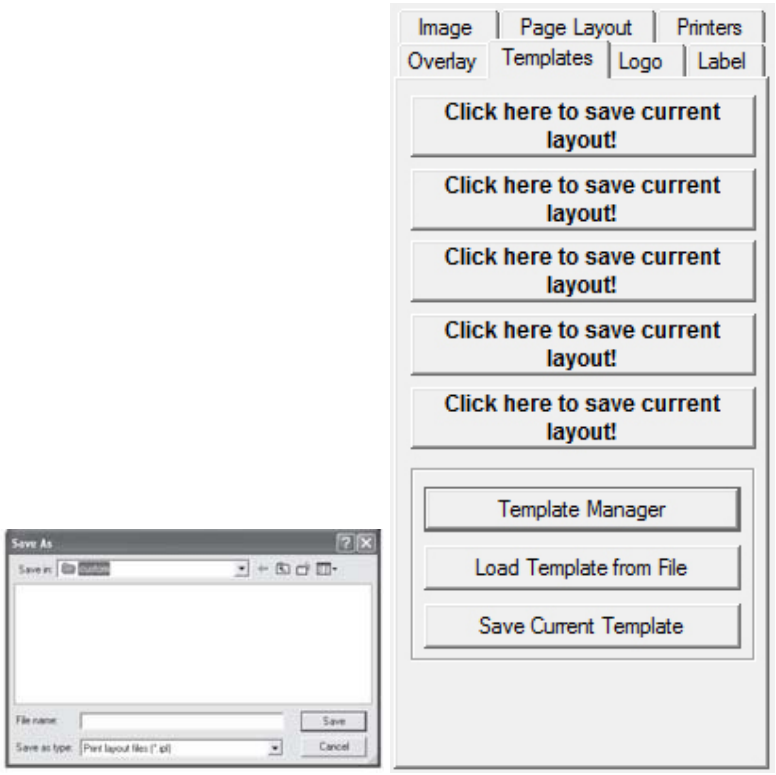
By default, internal margins are the same size as the borders, with image margins on, the left and right hand side of each frame are equal to the left and right hand borders. Margins on the top and bottom of each frame are equal to the top and bottom borders of the printed page.

If the user intends to cut individual frames out of the printed page, it is recommended that internal margins are set to twice that of the page, which will give a uniform border size on the individual image segments. If it is necessary to maximize the amount of space on the printed page, the internal margins can be turned off altogether.

Saving and Loading Print Layouts

The **Templates** tab allows the user to save and load pre-defined print layouts. There are five user defined layouts. Set up the layout on the preview window and then select one of the buttons labeled **Click here to save current layout!** The user will be prompted for a title.

To save more layouts click on the **Save Current Template** button. Here the user can set a file name for the Layout.



Adding Patient Demographics

Select the **Overlay** tab to bring up the patient demographic layout options.

From here, the User can select:

- Text position (includes top left, top center, top right, bottom left, bottom center, bottom right).
- Text size (includes: small, medium, large).
- Text color (includes: white on black, black on white).

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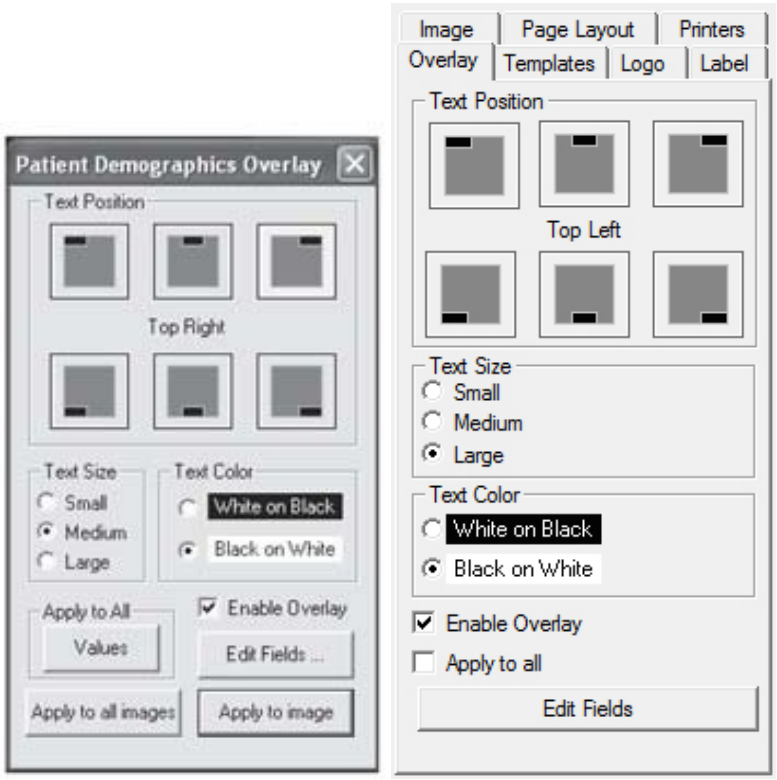


The user has the option to apply the current settings to every image in the print view or only in the currently selected image via the **Apply to all images** button or the **Apply to image** button.

By selecting the **Enable Overlay** check box the user can turn patient demographics overlay on and off for all images. The user can also edit the fields that are available on patient demographics overlay by clicking on the **Edit Fields** button.

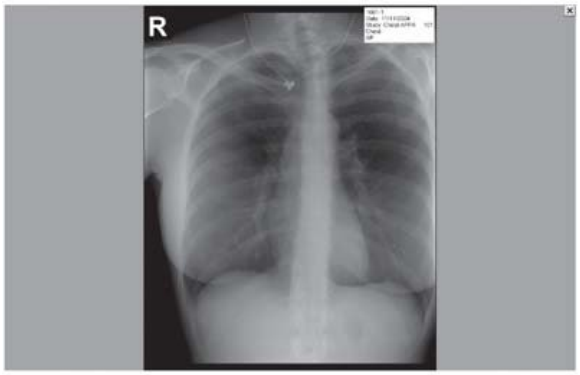
From here, the User can:

- Select a field and determine what kind of a delimiter following the field (includes: none, space, tab, comma, newline, custom).
- Change the position of the fields with the up and down arrows.
- Remove or display a field by selecting the Print Field check.
- Print the title for the field (i.e. the title "Date:" would be printed in front of the date field).

After editing the fields, click the **Done** button.

Print Preview

To see a print preview, click the **Print Preview** button.



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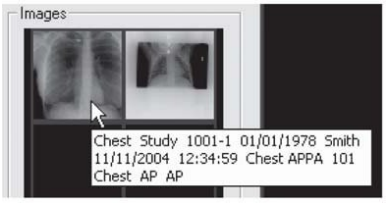
Printing Images to a DICOM Printer

When the user has finished dragging and dropping the desired images onto the preview window and manipulating size, position and window/level (if necessary), then press the **Print** button in the bottom left hand corner of the **DICOM Printer** dialog. Please ensure all the printer settings are correct first.

Patient Demographics for Icons

When the cursor is over the icon bank, Advanced DICOM Print will display the demographics for the image.



Multiple Icon Pages

Advanced DICOM Print has an unlimited number of icons that can be loaded. However, the PC's memory is a restriction.

To clear the current page of icons, click on **Clear Current Page** button. To clear all the pages of icons and preview window, click on **Clear All Pages** button.

To move between pages and move to first and last pages click on the arrow buttons.

Printing to a Paper Printer

1. After QPC Print Tool has launched, go to the DICOM Application Print Server window.
2. Click the Printer button.
3. Select the Paper Printer you wish to use from the drop-down menu and click **OK**.

Note:

QPC Print Tool can only use a Paper Printer that is a part of the user's network.

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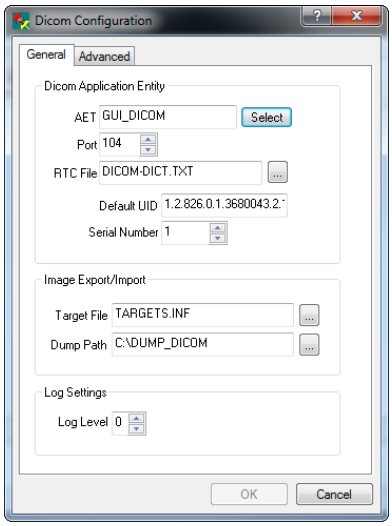
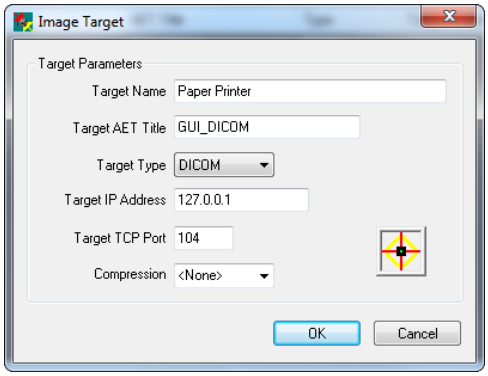
4. Click the Settings button.



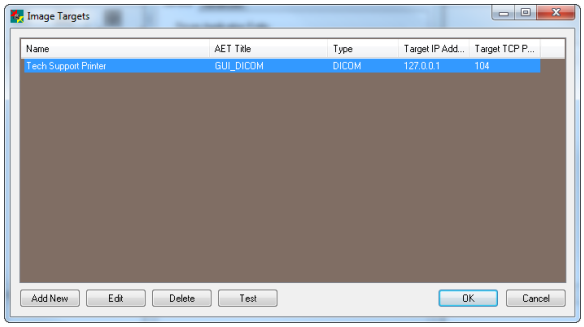
5. Click the **Select** button located to the right of the AET field.
6. If a Paper Printer is already set up, the user can select one of the existing settings. Else, they should click **Add New**



Enter the following information:

- Target Name: User can set the name of the printer
- Target AET Title: GUI_DICOM
- Target IP Address: 127.0.0.1
- Target TCP Port: 104

Click **OK**. Select the new settings and click **OK**.



7. In the Dicom Configuration window, set the Serial Number to "1", and then click **OK**.

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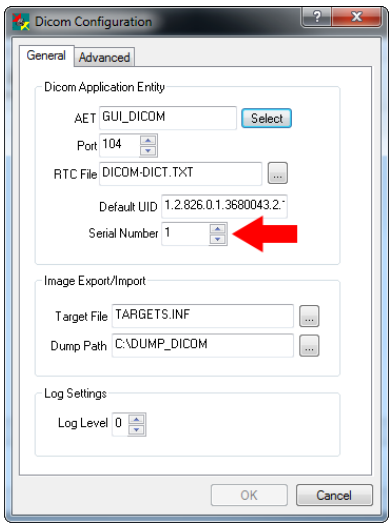
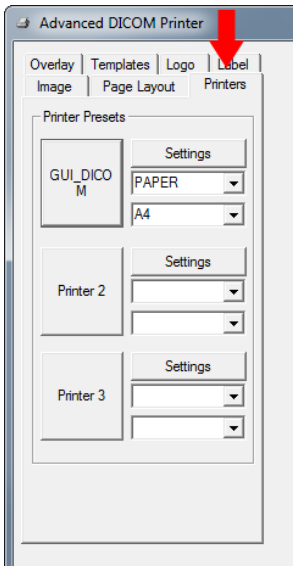


8. Go to the Advanced DICOM Printer window and select the Printers tab.



9. In the Printer Presets section, click the **Settings** button of one of the preset printers. This will open the DICOM Print Settings window.

Note:

For this example, the settings button of Printer 1 was selected.

10. In the DICOM Print Settings window, select the Printer tab.

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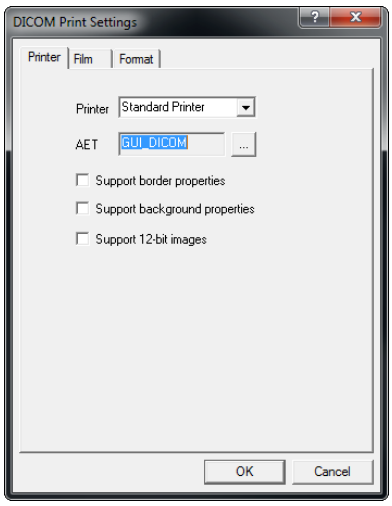
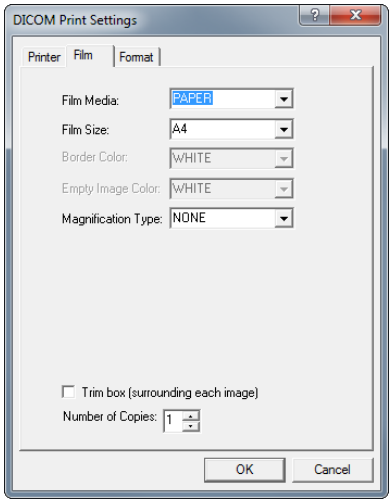


11. From the Printer drop-down menu, select the "Standard Printer" option.

12. Click the **...** button to the right of the AET field to set the AET. Select the AET settings you entered earlier in the DICOM Application Print Server window. Click **OK**.

13. Select the Film tab.



14. Change the Film Media setting to "PAPER" and the Film Size setting to "A4".

Note:

A4 size is equivalent to 8.5 x 11 inch paper.

Note:

It is also possible to print on 11 x 17 inch paper by selecting the "11INX17IN" size.

15. Click **OK** to close the DICOM Print Settings window.

16. Select the **Configure DICOM** button to open the Dicom Configuration windows.

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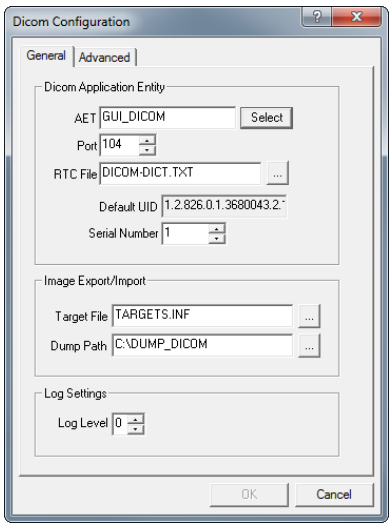
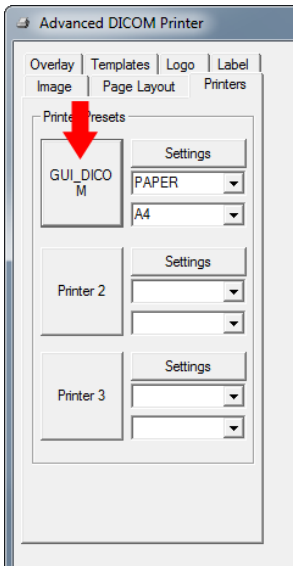


17. In the General tab, click the **Select** button to the right of the AET field. Select the AET settings you entered earlier in the DICOM Application Print Server window. Click **OK**.
18. Click **OK** to close the Dicom Configuration window.
19. Select the GUI_DICOM printer preset in the Printers tab.



20. Select the **Test Printer** button. If the settings are correct, the program will state: "Successfully associated a connection with GUI_DICOM". Click **OK**.
21. Click **Print** to print the image using a paper printer.

Note:

Be sure an image is selected for printing. To select an image for printing, click and drag the image from the Images field on the right to the black Preview field in the center of the Advanced DICOM Printer window.

Note:

If the Printer Test was successful, but the paper printing failed, the network settings might need to be modified. Contact your facility's IT personnel.

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DICOM Print Troubleshooting for Windows

Multiple Instances

Ensure that there is only one instance of QPC Print Tool running.

1. Open Task Manager by clicking on **Start Menu**, then **Run**.
2. Type in "taskmgr" and click **OK**.
3. Close QPC Print Tool.
4. Under the Processes tab, check if DCM.exe, DICOMMultiPrinter.exe, or AppPrintSCP.exe. is running. If so, close them by clicking **End Process** for each of them.
5. Reopen QPC Print Tool.

Target Information

Check the target information for both the Advanced DICOM Print and DICOM Application Printer Server.

1. Select Advanced DICOM Print and click on Configure DICOM button, the DICOM Configuration dialog will appear.
2. Click on Select to see full details of this target.
3. If Advanced DICOM Print has not been entered as an item in the targets list then fill in the relevant settings.

Note:

The target details for this application are usually: AET: ADV_PRINT_DICOM, PORT: 4008, and IP: 127.0.0.1

4. Select this new target and click **OK**.
5. Click **OK** on the DICOM Configuration to save settings.
6. Close QPC Print Tool and reopen Select DICOM Application Printer Server.
7. Click on the Settings button. The DICOM Configuration dialog will appear.
8. Click **Select** to see full details of this target.
9. If DICOM Application Printer Server has not been entered as an item in the targets list then fill in the relevant settings.

Note:

The target details for this application are usually: AET: PRINT_DICOM, PORT: 3008, and IP: 127.0.0.1

10. Select this new target and click OK.
11. Close QPC Print Tool and then reopen the program.
12. Go to Advanced DICOM Print and test the printer.

Note:

This assumes that the user has the DICOM_PRINT target selected as the default printer to print to.

To set the DICOM_Print target as the default printer, select the Printer tab in ADVANCED DICOM PRINT and select the DICOM_PRINT button.

13. If this fails, recheck that multiple instances of QPC Print Tool are not open in Task Manager.

Properties

Ensure that all selected and unselected options are correct.

- If the printer does not support border properties, deselect this option.
- If the printer does not support background properties, deselect this option.
- If the printer does not support 12-bit images, deselect this option.

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Print Options

Check the print options to ensure all settings are correct.

- If printing to a paper printer, the user cannot have BLUE_FILM selected (unless it uses BLUE_FILM). The PAPER option should be selected.
- If the wrong paper size is selected, the DICOM Application Printer Server will notify you that the operation has failed. The message log will say incorrect paper size.

Note:

The default paper size for a paper printer is 8INx12IN.

Configuring a Printer with the QPC Print Tool

The following section demonstrates how to setup a DICOM film printer with the QPC Print Tool.

1. Open the QPC Print Tool.
2. On the Printers tab, select the **Settings** button.

   The DICOM Print Settings window will appear.
3. Select the printer make and model from the **Printer** drop-down menu. If the make and model of your printer is not available, select **Standard Printer**.
4. Select the **"..."** next to AET.

   The Image Targets window will appear.
5. In the Image Targets window, select **Add New**.
6. Enter the target system's AET, IP address, and port number. Ensure the compression is set to "none" and the Target Type is "DICOM".

   Click **OK**.
7. In the Image Targets window, select the target you just created, then select the **OK** button.

   In the DICOM Print Settings window, select the **OK** button.
8. In the Advanced DICOM Printer window, select the **Printer 1** button (or the applicable printer), then select the **Test Printer** button to test the association to the printer.

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Clearing the Java Cache

Clearning the Java Cache will remove Java Web Start programs.

1. Go to **Start** > **Control Panel** > **Java**.
2. Locate the **Temporary Internet Files** section. Click the **Settings** button.
3. Click the **Delete Files** button.
4. Make sure **Applications and Applets** and **Trace and Log Files** are both checked, then click **OK**. The Java Cache is cleared.

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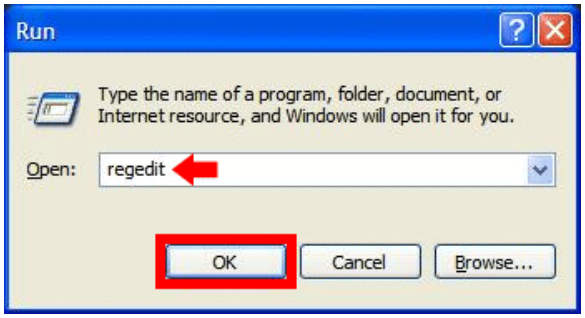
Setting the Display Back to Default Using Regedit

If the monitors are not displaying properly, the User should reset them to their default state.

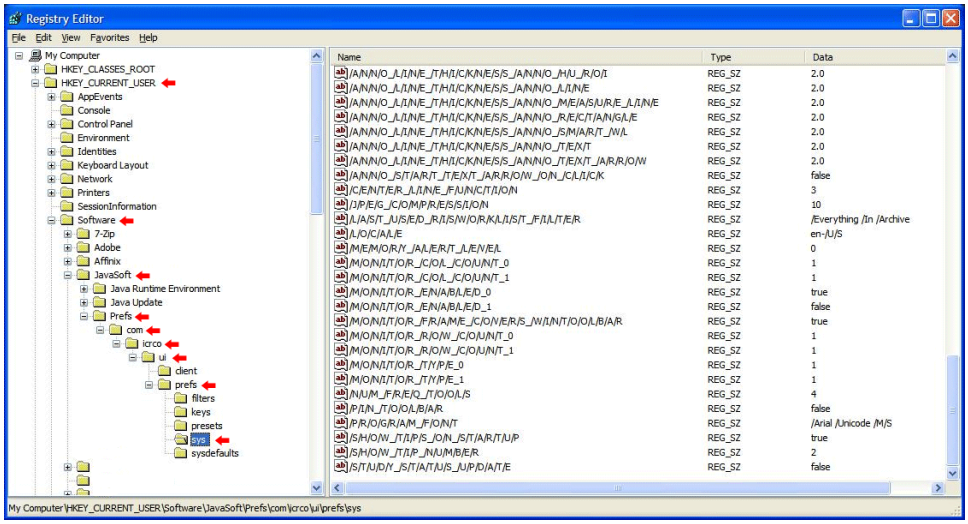
Warning:

Improper editing of the Windows Registry may result in a non-functioning system and/or loss of data. Making regular data back-ups is the only way to ensure data integrity. iCRco assumes no liability for lost or corrupted data while following these instructions.

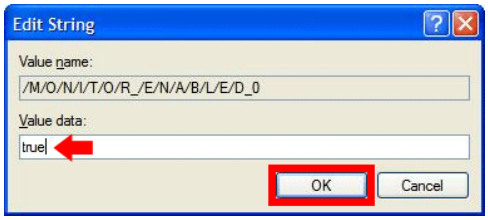
1. Go to **Start** > **Run**.



2. Regedit will open.
3. In the file tree on the right side of Regedit, go to **HKEY_CURRENT_USER** > **Software** > **JavaSoft** > **Prefs** > **com** > **icrco** > **ui** > **prefs** > **sys**.



4. Locate the string `/M/O/N/I/T/O/R_/E/N/A/B/L/E/D_0`, double click the string and set the `Value Data` to `true`.



5. Any subsequent monitors attached to the system and detected by Clarity will have a string like: `/M/O/N/I/T/O/R_/E/N/A/B/L/E/D_1`. Locate the rest of the monitor strings and set their **Value data** to `false`. Click **Ok** to save the changes.

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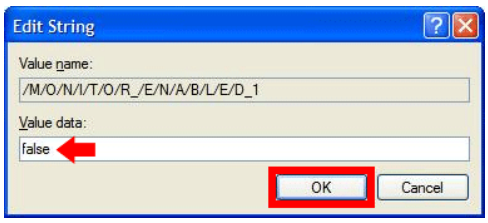

6. On the next launch of the Clarity Viewer, the primary Windows monitor should be the only monitor Clarity uses. From this point, the User may log into Clarity and re-configure the monitors, as described in Section *Monitor Configuration Options* on page 24.

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